DOCUMENT RESUME

ED 131 024 95 SP 010 583

AUTHOR Briggs, Leslie J.; Aronson, Dennis T.
TITLE An Interpretive Study of Individualized Instruction in the Schools: Procedures, Problems, and Prospects. A Final Report.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Apr 75
GRANT NIE-G-74-0065
NOTE 140p.

EDRS PRICE MF-$0.83 HC-$7.35 Plus Postage.
DESCRIPTORS Change Strategies; Educational Planning; *Elementary Education; *Individualized Instruction; Program Administration; *Program Descriptions; *Program Development; *Program Evaluation
IDENTIFIERS IGE; Individually Guided Education; Individually Prescribed Instruction; IPI; *Program for Learning in Accordance with Needs

ABSTRACT

This report investigates the concept of individualized education both from a descriptive view of its general features and purposes and from an analytical view of specific components in such systems, identifying the component steps necessary for planning and implementing individualization. Chapter one deals with the importance of individualized instruction in terms of problems facing the nation's schools and in terms of public expectations of the schools. Chapter two investigates the salient features of three nationwide programs (Program for Learning in Accordance with Needs--PLAN*, Individually Prescribed Instruction--IPI, and Individually Guided Education--IGE). These three programs are the most highly organized, widely disseminated efforts in public elementary school individualized education, and together contain most of the elements in any individualized system. Chapter three describes the programs of nine selected schools, some of which were locally developed, and some of which were a mixture of local and national programs. Chapter four lists and describes critical aspects of planning, implementing, and evaluating systems of individualization. Chapter five examines problems involved with the individualization process--problems of individual schools in a system trying to "go it alone," problems of record keeping, community support, scheduling, team teaching, learning environments, and funding. The final chapter presents reflections on the study, recommendations, and general conclusions on the philosophy of individualization. An annotated bibliography, a list of schools and programs studied, and a description of project procedures are appended. (MB)

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FINAL REPORT

An Interpretive Study of Individualized Instruction in the Schools: Procedures, Problems, and Prospects

by

Leslie J. Briggs
Principal Investigator

and

Dennis T. Aronson
Research Associate

Florida State University

National Institute of Education

Grant No. NIE-G-740065

April 1975

SP010 583

The project presented or reported herein was performed pursuant to a grant from the National Institute of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the National Institute of Education should be inferred.

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FOREWORD

This report is for persons charged with the responsibility for our nation's schools -- teachers, administrators, school board members, and policy makers at the state and national levels. It is also for any other interested persons -- pupils, parents, and members of local communities.

The basic data for this report came from two sources: (a) direct observation of classrooms (K-9) and conversations with school personnel in 42 schools, and (b) evaluation data, research reports, and descriptive articles and books on the subject of individualized instruction.

Some early school visits were made by both authors of this report, after which each author made other visits independently in order to accomplish visits to as many schools as possible. The joint visits helped to set the observation and interview procedures to be followed during the later visits. The schools visited are listed in Appendix A.

The literature reviewed was far more extensive than is suggested by the items listed in the Selected Bibliography section of this report. Only the most extensive or most relevant references are cited in this report. Both the ERIC System and conventional library search methods were employed to locate the some 200 books and articles which were actually read and abstracted during the course of the project.

This report, in general, is organized to go from the more descriptive aspects of specific individualized instruction programs to the more analytical examination of specific components in such systems. Thus the early chapters deal with descriptions of general features and purposes of individualized instruction and with brief descriptions of specific

programs, both locally-developed and nation-wide programs. The remaining chapters identify the component steps necessary for planning and implementing individualization, and they air some issues and problems relating to individualized instruction. One chapter presents a "hypothetical composite picture" of how an ideal program might operate, drawing from the best examples observed of how each component might be implemented.

The authors wish to thank the many superintendents, principals, teachers and other school personnel who welcomed them to their schools. Those persons made it possible that their successes as well as their problems could be shared with others by means of this report. Thanks are also expressed to the persons who read the first draft of this report and made comments designed to correct errors and to improve the usefulness of the report to the intended readers.

Finally, the authors are indebted to the pupils in the many individualized - instruction classrooms visited. These pupils answered all questions the visitors asked, and since many of them had been taught to regard all adult visitors as "teachers", the authors thus were sometimes called upon for "help" such as the assigned teacher or aide would provide. It was a happy experience to step into these classrooms to find that 90 per cent, if not all pupils, were busily engaged and "on task." In each classroom, a few pupils might look up, and smile or wave or speak to the visitor, whereupon they would return at once to their study. The pupils appeared to be happily busy, whether working alone, in pairs, or in small groups, with little evidence of racial tensions or other disturbances. The presence of the visitors

appeared to create almost no disturbance of pupils' attention to their studies.

In this report, an attempt is made to blend the observations made in the 42 schools with research data, and to interpret the total data in a form that will help school personnel make decisions and plans for the future.

Chapter 1:

The Importance of Individualized Instruction

Why should the topic of "individualized instruction" be of current importance to the nation's schools? Have not good teachers always tried to give attention to each pupil's interests and needs? Why is this topic especially timely now?

This topic is of special timeliness because of some of the current problems facing the schools at the same time that public expectations of the schools are increasing. More is being expected of the schools at the very time that new problems are facing the schools. This situation might seem impossible to resolve except that new tools are now available to the schools. One of these tools consists of a whole variety of techniques for developing organized systems for individualizing instruction. Other tools will also be mentioned. The purpose of this chapter is to relate individualized instruction to other tools which may be employed singly or in combinations by schools to solve current problems to the degree required by good professional practice and expected by public opinion, and hence by public policy.

Current Problems of Schools

Increased Heterogeneity

The typical school, as well as the typical classroom, now has a wider range of pupils than ever before.

Within schools, this results from racial intergration, higher mobility of families, closing of smaller schools, more bussing of pupils for greater distances, and many other factors.

School is no longer only for the wealthy, the academically elite, or pupils whose backgrounds permit them to learn by a single conventional group method of instruction. Also, school is no longer restricted to preparation for either farming, homemaking, manufacturing, or the professions, as was the case earlier in our history.

Within the classroom, heterogenity is also increased, not only because the total school population is more varied, but also because of the shift away from "sectioning" or "tracking" of pupils at a given age or grade level into different classrooms, each composed of either "high," "middle," or "low," pupils. While the shift away from "ability grouping" is justifyable on both philosophical and empirical grounds, it does require new roles and new skills of the teacher, and new tools.

A Changing Society

Many current writings comment upon the speed of change in our present society as compared to earlier times. Comment also focuses upon the pluralistic nature of our present society. The public school curriculum presumably must be flexible enough to prepare a heterogeneous pupil population for many different future adult roles, including some future occupational skills not yet fully identified. All these factors require a degree of flexibility in both curriculum and methods, that apparently was not needed in the past when changes came more slowly and when fewer people were to be prepared for fewer kinds of adult roles.

It would be difficult for the school curriculum to adjust fully to any one of these factors, yet it must attempt to adjust to all -- heterogeneous pupils, pluralistic values, multiple adult roles, rapid change, and uncertainty of the direction of future change.

Clearly no one tool or set of tools will make all the adjustments needed, but individualized instruction appears to be one of the needed techniques.

Other Problems

These include racial tensions, drug usage, dropouts, discontent with curriculum and methods, and general public dissatisfaction with school programs and results. Some schools are criticized for not teaching basic skills; others for not offering vocational programs; and others for disregarding the welfare of children who differ from pupils who previously attended the school. And not the least of problems is public reluctance to increase taxes to meet rising costs or new needs.

Public Expectations

In spite of the above problems, many of which are relatively new to the schools, the public is asking for: (a) a more varied curriculum to meet the need for vocational as well as academic programs; (b) higher degrees of pupil achievement, especially in basic skills; (c) more attention to individual pupils to insure quality education for all; (d) direct accountability by the schools; and (e) reduced expenditure per pupil. One is almost tempted to conclude that "never before was so much asked by so many of so few at so little cost."

The Schools' Response

While no claim is made that all schools are moving as systematically as might be desired to solve the dilemma of the present problems vis-a-vis the present public expectations of schools, certainly many schools are taking a variety of steps to meet the challenge. These efforts may be classifed as to methods and classroom organization, on the one hand, and

as to curriculum content, on the other hand, as listed below.

Methods and Classroom Organization

1. Team teaching
2. Ungraded classrooms
3. Open space classrooms (pods)
4. Differentiated staffing
5. Learning resource centers
6. Flexible scheduling
7. Individualized instruction
8. Group dynamics
9. Computer-managed diagnosis and remedial instruction
10. Work-study programs

Curriculum Content

11. Drug education
12. Cultural studies
13. Career education woven into basic studies
14. New vocational thrusts
15. Inclusion of personal development objectives

This report, of course, focuses upon item 7 in the above list, but in the schools visited, individualized instruction was often seen in combination with some of the other arrangements listed above.

Varieties of Individualized Instruction

The varieties of individualized instruction discussed in this report include only those found in the 42 schools visited. The total

grade span represented is K-9; the individual schools visited included many specific level combinations, such as: K-2; K-3; K-4; K-5; K-6; K-8; 5-8; 6-8; and 7-9.

This report thus includes only those types of organized individualized programs of instruction seen at the above levels. By organized is meant that efforts made by individual teachers, alone, were not included. The programs observed were organized efforts of at least several teachers in a school or several schools in a district. Excluded, then, are techniques of individualization which individual teachers employ as a part of conventional procedures.

As will be seen in later chapters, these forms of organized individualized programs require many cooperative efforts, different kinds of support, and a variety of ways of sharing space, materials, techniques, and experiences. Some schools began by importing either entire instructional systems or components of them, from ongoing programs which originated elsewhere. Other schools developed their own programs, using only some materials or components designed for a system operating elsewhere. Some of the importing was from systems developed at universities or R & D centers or laboratories; other importing was from other schools, either by visitation, special training, workshops, or adoption of specially-designed materials.

Roots from the Past

It is not intended here to present individualized instruction as something new. Attention to the special needs of individual pupils has been emphasized in the past writings in educational theory and practice

and in the psychology of individual differences. As seen in the school, the familiar Winnetka Plan and many others were the historical forerunners. And it is not that the early school programs failed; rather interest in them shifted as new points of emphasis in education waxed and waned. Briefly said, the popular trend seemed to shift from skills, to adjustment, to science after launching of the Soviet Union's Sputnik, and now to what might be called a "new humanism" -- an interest in each pupil and all aspects of all pupils' needs -- their aspirations, their frustrations, their past mistreatment or disadvantaged status, their present problems and their future plans. While this new kind of interest in the person seems to be the result of social and political trends of recent years, differential teaching for different pupils is not new. But recently developed tools, as well as public demand, may make the present trend toward individualization more permanent than were past efforts.

New Tools

For a century, at least, textbooks used in teacher training exhorted the would-be teacher to pay attention to the interests and needs of each pupil, but few tools for doing this were offered, and few modelings of such a method were demonstrated by the teacher trainers. Now, however, there are new tools and there are opportunities for observations, demonstrations and workshops to help prepare teachers to use individualized methods.

Some of the specific tools useful for designing an individualized instruction program are old, and some are new. For example, diagnostic tests were prevalent in school practice 50 years ago. Then they faded out. Some of the techniques on which those old tests were based are

still valid, and some refinements have since been made. Other tools are more recent in origin, but almost all have many historical roots. Some currently useful tools for an individualized program include:

1. Techniques for classifying and analyzing goals and objectives. The taxonomy by Bloom and others is perhaps best known. Another by Gagne and Briggs (1974) covers objectives in the following domains: attitudes; motor skills; intellectual skills; cognitive strategies, and information or substance learning.

2. Techniques for needs analysis. These include use of data from forecasts of the future; study of community needs and resources; study of national policy and educational goals; and study of the pupil and his family.

3. Techniques for determining learning sequences. The specifics vary with the domain of learning, but one example, the skill hierarchy, has been used to derive objectives and sequences for intellectual skill areas of the curriculum.

4. Techniques for group interaction analysis. Various methods of interaction analysis help describe on-going processes, and the results can suggest improvements for small- and large-group methods.

5. Techniques for diagnosis and prescription. Various kinds of tests and other assessment instruments can be the basis for planning a course of instruction based on pupil's current status with respect to a given curriculum.

6. New types of instructional materials. These include audiovisual presentations, tape recordings, special workbooks, programmed instruction, and a variety of other materials which, once selected by a pupil or assigned by the teacher, permit the pupil to progress, largely without

direct help from the teacher. This frees teacher time for planning programs for each pupil, for diagnosis and prescribing learning objectives, and for personal tutoring when a pupil has trouble with the assigned materials.

7. Computer uses. In some schools, computers are used either to store cumulative data on the learning styles and modes of each pupil, or to suggest appropriate new assignments, or both. In some systems the computer shows the varieties of materials, media, and activities available for each objective, so that the teacher can match the material to the pupil (Harnack, Toeffler, and Sullivan 1974). In other applications the computer helps match materials to pupils (Flanagan; in Harriet Talmage [Editor], 1975). In a minimum use, the computer can keep the cumulative record of pupil progress.

8. Keying of materials and tests to objectives. In all schools visited, some form of "keying" was done either by the system developer, by district personnel, or by the teachers. This brings "congruence" among objectives, evaluation of progress, and learning materials and activities. This keying can be accomplished for commercially available materials or for locally developed materials, and the process of keying can help spot gaps in needed resources.

The above tools represent some of the key reasons why organized individualized instruction programs are a current reality. Continous improvement in the total process can be expected to yield increasingly better results in the future.

Exclusions

Some educational procedures which might well be designated as "individualized instruction," but which were not observed and hence are not discussed here, include: credit by examination; honors programs; independent study programs; seminars for the gifted; taking academic "overloads," and the English "free school" concept (e.g., the Summerhill school) and the English open "infant schools."

Inclusions

The meaning of individualized instruction as treated in this report was derived by observing, in the schools visited, combinations of any or all of the following practices.

1. Some proportion of class time is spent for use of self-instructional materials, such as programmed instruction booklets or workbooks. The pupil works alone during these periods, so the work is self-paced by the pupil.

2. Some proportion of class time is spent by pupils working in pairs -- reading aloud to each other or working out problems together. Sometimes these pairs actually amount to peer teaching -- a child who has mastered an objective helps another child to do so.

3. Some proportion of class time is devoted to small group activities. Typically these groups consist of five or six pupils, and the activities may be introduced by the teacher and then left for the pupils to carry on to completion. Such groups are formed and reformed at frequent intervals depending upon each pupil's progress in the overall scope and sequence of objectives.

4. Some small-group work is automatically paced by audio recordings.

Each child in such a group hears the directions as to how to proceed through a pair of earphones. Often the audio directions pace the group through exercises in workbooks. While the grouping is thus mainly for convenience of access to earphones located in one corner of the classroom, often the children obtain cues by watching each other, and feedback to each problem in the workbook is provided by the recording.

5. Large-group work is often devoted to listening and oral communication skills which can be so conducted for a group whose reading levels are widely varied. Thus reading and mathematics skills are developed by a sequence of individual and small-group study, because sequencing is important, while other skills and enrichment experiences can be achieved in larger groups.

6. Large open areas (pods) often involve still larger groups of pupils and several teachers. Within the total area, some specialized areas are designated for individual and small group work, while certain periods are scheduled for total-group activities, film viewing, and the like.

7. In most of the above modes of study, the specific materials used are often selected on basis of teachers' knowledge of the learning styles that appear to characterize each pupil. Most of the objectives are keyed to several kinds of print and non-print materials, to aid teachers and pupils in making choices of materials and activities.

8. While individualized instruction could include pupil choice of objectives, this kind of pupil choice was not frequently observed. Perhaps since most of the individualized programs observed were for reading and mathematics, such pupil choice may be less appropriate than it would be for other curriculum areas. More pupil options as to choice of objectives

were observed in some areas of science and social studies programs.

9. Free periods were observed during which pupils could choose play or enrichment activities, or could continue work in basic skills.

10. Regardless of type of learning mode, pupils were often given the means for making self-evaluations of progress before asking for further evaluation by the teacher.

11. Pupils are often permitted to interrupt work on skills which are more difficult or demanding by use of a variety of break activities.

12. Pupils in some schools are permitted to choose between a self-contained, ungraded classroom, managed by one teacher, or an open-space managed by several teachers. In the open-space choice, pupils often are free to seek help from the preferred teacher.

13. In all the above arrangements, teachers conduct initial placement assessment, and they carry on continuous diagnosis and prescription for individual pupils, regardless of whether the prescription is for individual or group work on a particular objective.

14. In all the above modes there is frequent assessment of pupil progress, and continuous adjustment in plans for each pupil.

The above practices were those most frequently observed; others will be specified in the description of specific programs in later chapters, which will also specify the planning activities that are necessary for carrying out the above learning modes.

It is apparent from the above list of frequently observed modes of operation, that the term individualized instruction can be somewhat misleading. Certainly, in the present context, the term does not mean that a teacher directly instructs one pupil at a time as the major

mode of operation. Typically, a pupil spends as much (if not more) time in group activity as in solitary study. One field reader of the draft of this report suggested the term "individualized learning", a very reasonable alternative. In any event, the more familiar term is retained here, but perhaps it should be considered to mean "individual diagnosis and prescription followed by an appropriate mode of learning."

Selection of Schools for Site Visits

The school districts and individual schools visited were selected on the basis of the following selection criteria:

1. A desire to sample both national and locally developed programs.

2. A desire to include schools which began with a national program but switched to a locally developed program, and vice versa.

3. A desire to visit schools from their first year of implementation on to several years of implementation. This factor rather automatically led to classroom observations of teachers in their first year of such experience, on to the most experienced.

4. A desire to see a cross section of schools in terms of: city, small town or rural; high, medium, and low income of the constituency; all racial mixtures; old and new physical facilities; schools aided by ESEA Title I or Title III funds, or neither; programs adopted by a single school in a district, by a few schools, and by all schools; and various regions of the nation (excluding Hawaii and Alaska).

5. A desire to see a variety of ways of individualizing instruction in conjunction with use of other tools listed in this chapter and in combination with a variety of innovative practices and a variety of local conditions.

6. Finally, it was decided not to visit the same schools whose programs were summarized by Edling (1970), as he saw them from 1968-70.

The selection of schools for the present project was facilitated by lists of adopting schools provided by three nation-wide programs, namely PLAN*, IPI, and IGE, by persistent use of the telephone, by personal contacts, and by assistance from area coordinators of the three nation-wide programs. These three programs are described in Chapter 2; the term "nation-wide" or "national" simply means that these programs have been widely adopted, not that they have the approval of any governmental agency.

Special Terminology of Importance

Throughout this report, terminology which is peculiar to a single school, district or type of individualized program has been avoided. In each case of such unusual or esoteric terms, it was possible to find a more commonly understood, generic term which would serve the purpose. For example, in the opening section of Chapter 4 there are listed 22 steps (or stages or components) which apply to planning and operating an individualized instruction program. It is believed that the meaning of those is either already widely understood, or that the meaning is made clear by the context in which it appears in this report. Thus, item 14 on that list, "task plan," is a general term the equivalent of which may be called by various other terms by various schools or individualized programs, e.g., "daily prescription," "lesson assignment," "module," "learning unit," "teaching-learning unit," etc. The reader who wishes to become familiar with the special terms used by national systems may find these in items listed in the Selected

Bibliography.

In this report, individualized "programs" and "systems" have been used interchangeably. It was not the intent to place the word "systems" in the now widely used context of "systems analysis" or "systems approaches to the design of instruction." However the reader familiar with that field of study will see a crude parallel -- in this report, by both "program" and "system" is meant a planned, integrated set of components for operating individualized instruction, including components such as those listed in Chapter 4, in contrast to mere parts of a system, such as "instructional materials," "classroom organization," and the like.

In spite of the above effort to use commonly understood terms, there are three terms often used in this report which have a distinctly literal meaning, and hence need to be made clear at the outset. A discussion of objectives, objective-referenced tests, and norm-referenced tests follows.

Objectives

Since goals and objectives often become confused or merged in usage, the meanings here need to be specified. The term goals is reserved to mean such long-term outcomes of education as might be realized at the end of an entire K-12 curriculum. Such goals may include "good citizenship," "education for leisure," "vocational competence," "skills in reading and mathematics," "independent learning," etc.

Objectives, on the other hand, refer to much shorter-term outcomes of instruction such as may be acquired by a pupil in one hour or one week of study. Another distinction here is that an objective refers to

what the pupil can do and can be observed to do, on a test or evaluation exercise, at the successful completion of a learning task. An objective, in the present context, does not refer to what a teacher does or to what content is presented to the student. It refers rather to a new outcome of learning that can be identified as a new kind of performance on the part of the pupil.

For example, "adding whole numbers, "adding fractions," "adding mixed numbers," and "adding decimals" would all appear as separate objectives in an entire list of objectives for a given level within the scope and sequence of a mathematics curriculum. To be sure, passing separate tests over each of these different objectives would require the prior learning of a still more basic set of skills, such as "carrying," which would be found as earlier objectives within the total sequence. All of these, however related, can be identified as separate skills and can be measured as such.

Different programs list objectives in different degrees of detail. One program might show a separate objective on pronouncing the different sounds of the letter "a," while another program may list a broader objective of pronouncing vowel sounds. For this reason, the number of objectives for a year of study would vary greatly among programs in the same skill area. But however narrow or broad the objectives might be, the individualized instruction program provides both learning materials (and activities) and tests for each objective. Thus the task of keying materials and tests to objectives is a critical one in all the school programs observed in operation. The objectives describe the desired outcomes, the materials and activities provide the means for learning, and the tests provide the mechanism for placement, diagnosis, prescription, and monitoring of pupil progress.

However narrowly or broadly the objectives are stated, they are usually provided to the teacher in a recommended sequence, which may be followed quite literally or departed from to some degree, depending on the perception of the teacher as to the degree to which sequence may be varied. It is this variation in regard to sequence which, in part, leads some teachers to prescribe more individual study and others to prescribe more small group work for pupils who are near the same point in the sequence but not at the exact same point.

Often objectives make clear only what the pupil is to learn to do, such as "add fractions." Sometimes the objectives are written to include how the pupil will be tested for mastery of the objective, and how well he must perform to be cleared to go on to study of the next objective. Regardless of how the entire purpose is communicated, the key to individualized programs is to provide the teacher with the objectives, the tests, and appropriate materials. The teacher, in turn, often then communicates the objectives to the pupils so they will understand the purpose of the assigned work, i.e., so they will know precisely what they are expected to learn to do next.

Objective-Referenced Tests

The term objective-referenced test refers to a test designed to determine whether or not a pupil has mastered a specific objective. Other authors use the term "criterion-referenced test" because such test results are interpreted in terms of the level of pupil performance that is used to define acceptable performance or mastery of the objective. The two terms are used interchangeably in this report, and they carry

the following implications:

1. The test is designed to determine whether or not a pupil has mastered a specific objective.

2. The test thus permits early detection and diagnosis of failure to learn, helping to identify the need for remedial study, and it helps to verify mastery when the pupil has succeeded.

3. The test normally is not used to rank order pupils or to derive percentiles, letter grades, or to perform other, "normative" purposes, nor is it used to compare one school or classroom with another. Thus the test does not need to yield a wide range of scores, and it does not have to "discriminate well all along the line," so long as it provides a basis for the mastery or non-mastery decision for each pupil.

Norm-Referenced Tests

On the other hand, the term "norm-referenced" test (for either a teacher-made or standardized test) is reserved for tests covering long blocks of learning time (such as a year) and which hence measure mixtures or composite sets of objectives, whether or not the objectives are identified. The features of a norm-referenced test, thus are:

1. The test is not usable for diagnostic purposes or for daily monitoring of pupil progress, as it does not show which specific objectives a pupil passed or failed.

2. If the test is a standardized test, it may not have been designed to measure the objectives adopted by a particular school.

3. If the test is a standardized test, it has been designed to yield high variability of scores; it thus discriminates among various degrees of learning. The interpretation of scores, for either individuals or

groups, is made by reference to norms which represent performance for large numbers of pupils. Scores on such tests usually correlate highly with intelligence, and they may or may not measure the objectives adopted by a given school.

Use of Tests for Program Evaluation

It may be noted that both types of tests mentioned above may be useful for program evaluation. Use of objective-referenced tests can show how many pupils mastered which objectives (and how many) during the year. Such data are also useful for determining just where the program needs improvement. Norm-referenced tests may be used to compare the new program with some other program, or to compare average scores to national norms. A strong note of caution is in order at this point, however. If local objectives are very different from the (implicit or explicit) objectives on which a norm-referenced test was based, then results from that test would be "invalid" for evaluating the program. On the other hand, if a local school's objectives coincide closely with those measured by the test, then the test could be used as an aspect of program evaluation.

Due to the above consideration, if there is rather good agreement nationally on what objectives a K-6 reading or mathematics program should employ, and if local teachers direct their efforts to mastery of those objectives, then results from a norm-referenced test (interpreted by use of national norms) could be very useful, indeed. If, on the other hand, a K-6 reading or mathematics program employs objectives different in nature from those of most schools, then a norm-referenced test (designed for most schools) would not be relevant for evaluating the local program,

unless it were to show what was not achieved while the locally-valued objectives were being achieved (as measured by objective-referenced tests.) The public and the media need to understand these matters when standardized test results are quoted as evidence of the effectiveness of local school; otherwise gross misinterpretations may result leading to mistaken conclusions as to the value of the local program.

For a more complete discussion of "objective-referenced" and "norm-referenced" testing see recent measurement texts or Gagne and Briggs (1974, Chapters 9 and 12). For aspects of program evaluation other than test scores see EPIE (1974).

Summary

This chapter has dealt with the importance of individualized instruction in terms of problems now facing the nation's schools and in terms of public expectations of the schools. Many tools available to teachers for meeting the present challenge have been listed. Most of these tools are and have been employed in various combinations along with individualized instruction. Varieties of individualized instruction were listed, showing those which were and were not observed in operation in the visits to 42 schools.

The criteria which led to the selection of these particular schools and school districts were specified, and terminology of distinctive importance for this report was discussed.

Chapter 2:

Three Nation-Wide Programs in Individualized Instruction

Of the 42 schools visited, some were implementing one of three nation-wide programs developed elsewhere, some were operating a locally developed program, and some represented a combination consisting of some components of an imported program and some locally developed components. In the latter case, the imported components were sometimes from one of the three nation-wide programs and at other times from another locally developed program.

In this chapter, attention centers upon the three nation-wide programs. An effort is made to present a composite picture of how each of the three operates in typical adopting schools.

Chapter 3 describes the variations that are seen in how specific schools implement the three national programs, as well as how locally developed programs operate, and mixtures of locally developed and adopted program components. Furthermore, there are differences among teachers and among schools in details of how a total program is operated within a general framework coordinated by the district office.

Capusle descriptions of the three national systems are presented here because these three systems are, to date, the most highly organized and most widely disseminated efforts in individualizing instruction in public elementary schools in the United States, and because, taken together, these systems embrace most of the elements of any system of individualization. Also, continuing consulting assistance is provided by the developers, or the diffusers and publishers, or both. The descriptions given here are intended to present only the most salient features of each system. For further details about the programs, the reader should consult the appropriate references in the Selected Bibiliography in this report.

Origin and Current Status of the Three Systems

Each of these three systems was initially developed in a university or private research organization. During planning and initial development, selected school personnel and subject-matter experts were a part of the team. Then after small scale school tryouts, the programs were further developed and refined with the aid of publishers or other diffusion agencies.

The origin of the three systems was as follows:

1. Program for Learning in Accordance with Needs (initially known as PLAN, and later changed to PLAN*). Initiated by John C. Flanagan at the American Institutes for Research, Palo Alto, California.

2. Individually Prescribed Instruction (IPI). Initiated by Robert Glaser at the University of Pittsburgh.

3. Individually Guided Education (IGE). Initiated by Herbert J. Klausmeier at the University of Wisconsin.

After initial development and field tests, other organizations became involved for further development and dissemination. Westinghouse Learning Corporation is now completely responsible for further development and marketing of PLAN*. Research for Better Schools, a non-profit organization, is responsible for dissemination of IPI, and is now cooperating with the University of Pittsburgh in developing new products which are conceptually like IPI but when marketed will not carry the IPI label. The Institute for the Development of Educational Activities, an affiliate of the Kettering Foundation, and the University of Wisconsin, are both involved in disseminating IGE. The developer of IGE is now heading a

project sponsored by the Sears Roebuck Foundation to develop pre-service and in-service teacher preparation materials for IGE. Various publishers are assisting in these activities for IPI and IGE.

Continual revision and development have characterized PLAN*, IPI, and IGE, in part because the original plans required that the system be field tested and revised before being marketed, and in part because of increased interest in individualized programs by school personnel.

Description of the Three Systems

Program for Learning in Accordance with Needs (PLAN*)

Description. PLAN* is a system that provides a way to individualize the entire basic curriculum at all grade levels, K-12. The most complete part of the program is for the elementary level. The system includes lists of objectives for each curriculum area (language arts, mathematics, social studies, and science), tests for placement and monitoring pupil progress in each curriculum area, and sets of detailed directions to the student and to the teacher as to which instructional materials to use and how to use them. The developers of PLAN* have keyed specific pages of existing commercially available instructional materials to the objectives. When a school purchases PLAN*, it buys the objectives and the task plans which direct the student to the materials. If a school does not have the materials which are keyed to the plans, then these materials must be purchased, too, or the task plans must be amended to reflect relevant materials that are available.

To assist the teacher and student in selecting and scheduling objectives to be mastered, a computer support system is used. Each day the children and teacher submit answer cards to tests over completed work through a

terminal in the school or district office to the computer, which is located in Iowa, and the computer prints out various types of data which are available the following day. Daily monitoring of each child saves the teacher much work and facilitates grouping children with similar needs.

PLAN* offers alternative courses of instruction in some subject areas. These alternatives are called "strands"; each strand utilizes materials from different publishers, although the intended outcome is the same. Since the basic approach is to design instruction for the objectives around available materials, a school needs to plan for a few copies of many different textbooks, for example, rather than adopting a single text for all pupils. The program thus avoided the development of new materials except when no suitable material could be found. This strategy would presumably keep development cost down, but the cost of installation of the system and the cost of materials purchased may not have been significantly influenced by this strategy.

PLAN* is flexible and adaptable in that participating schools can develop local objectives, key their own materials to them, and tie these local packages into the computer support system.

An important advantage of the PLAN* approach is that the producers are constantly revising the task plans to include newly published instructional materials, and they continue to work with schools to make the system compatible with local conditions.

PLAN* in operation. In a typical day, the teacher begins by scanning the computer print-outs that were delivered at 7:30 a.m. These show

the students' progress on each of their individual programs of study. During the opening period the pupils follow directions in their task plans, reading specified pages in different texts or listening to tapes and completing accompanying exercises. When a task is completed the pupil consults the print-out to see which objective is scheduled, and writes his or her name on the blackboard under the column headed "ready for new task plans."

The computer print-outs are for each curriculum area, and they list all the children alphabetically for each classroom. After each child's name appear the numbers of the objectives the child completed and was tested upon as well as those started, deleted, or scheduled, based on a program of studies for each curriculum area developed by the teacher and the child. Most of the objectives are teacher-assigned but some are chosen by the child.

The computer then keeps a record of each child's progress daily. For example, one of the print-outs available from the previous day may list all the mathematics objectives dealing with fractions, and after each objective appear the names of the children who are scheduled to start the objective as well as those who are working on it or have completed it.

When pupils are on schedule or ahead of schedule in one subject area, they may next select either skill or enrichment objectives in a favorite area. When two or more pupils are working on the same objective, they may decide to work together, depending upon the nature of the activity. Some game-like activities may typically require two or more participants.

By consulting the chalkboard to note which pupils are ready to start a new objective, and by consulting the print-outs to note what may be undertaken next by each pupil, the teacher is able to make both individual and group assignments in an efficient manner. When introductory explanations or directions are required for an objective, the teacher can thus arrange to avoid having to repeat them during the same day. Then the teacher has time for individual conferences, checking progress, and advance planning.

When pupils are ready for tests over various assigned or self-chosen objectives, they use soft pencils to mark answer cards which are taken to the computer terminal for processing; results will appear on the print-outs the next day.

Once each week a summary print-out is also delivered to the teacher. This summary shows how many objectives each pupil completed the previous week. This information alerts the teacher to pupils needing priority attention either because they scored low on tests or because no objectives were completed. The signatures on the chalkboard also notify the teacher of pupils ready for new instructions.

The weekly print-out records which objectives were passed on basis of the tests provided by the program and which objectives were certified as passed by a personal evaluation conducted by the teacher. This gives the teachers the freedom of substituting their own evaluations for the tests provided, or to use both means for monitoring of progress. Teachers sometimes write complimentary notes on these print-outs as a reward device.

Every nine weeks, the computer provides a record of objectives completed and scheduled, a record that the school uses to report

progress to parents. Also periodically the principal receives a summary of progress of pupils in each teacher's class. And at the end of the year, the computer helps the principal determine the number and kinds of materials that will be needed the following year.

Evaluation comments. In the EPIE report (1974), the objectives adopted by PLAN* are described as having a strong cognitive orientation but little emphasis upon affective objectives. Objectives in social studies and language arts were said to focus on activities "from a disinterested, almost clinical approach which appears to lack personal involvement or committment." At the same time, the cognitive objectives were said to focus almost exclusively at lower levels of cognitive activity. The report also indicates that there is little stress upon alternative learning outcomes, and that the tests provided reflect this consistent focus upon only the action verbs specified in the objectives. The evaluators raised the question of whether the specific objectives are consistent with the broader goals such as self-direction, responsible decision-making, intrinsic motivation, and positive attitudes toward school.

The evaluation report suggests that different schools may use PLAN* in either a rigid or a flexible manner; this very matter may determine how well the broader goals are met. Teachers were quoted as reporting that they could learn to adjust to PLAN*'s demands and prescribed instructional role within two years, and pupils were reported having a positive feeling about the control they have over their own time and learning pace. Administrators reported a clear need to be both instructional leaders and communicators of the program to parents and

non-PLAN* teachers.

Since PLAN* is not based on any single learning or instructional theory, this provides the strength of openness in application but it may also bring a weakness in a lack of a consistent methodology.

In the judgment of the EPIE evaluators, there are no conclusive studies to indicate whether PLAN* students achieve more or less than do other students. But after reviewing available data, the evaluators concluded that there were shifts in both the positive and negative directions when achievement data were compared both within schools (before and after adopting PLAN*) and between PLAN* and non-PLAN* schools. Some of the more positive data were for grades up through 6. The recommendation made by EPIE was that a school should examine PLAN* and ask whether it represents the type of curriculum and the form of individualization that the school desires.

Costs. No data on program development costs were obtained for any programs discussed in this report. Therefore all costs to schools refer to installation costs and yearly costs of continuing the program.

In the case of PLAN*, the major expenses after the intial purchase of any materials not already on hand are for the computer services, lease of terminals, and for replacement of instructional materials. After the first year, the costs drop. In 1973-74 it was estimated that a school already in PLAN* for several years would spend about $42 annually per child for all contractual services, as compared to the national average of $18 per pupil (See EPIE, 1974). In Aurora, Illinois, where most of the eleven schools in the Eastside district use PLAN*, the cost per pupil is only $4 per year because of the economies of

having greater numbers of pupils served.

Individually Prescribed Instruction (IPI)

Description. IPI represents a somewhat different approach to individualization in that in addition to providing objectives, tests, and task plans, the instructional materials are also supplied with the system. The most complete programs are in reading, mathematics, and science. Users of IPI have found that aides are essential in helping to keep records, since IPI does not now include a computer support system (although such a system is planned).

IPI is known for the highly organized way in which each pupil is guided through the following procedure. The pupil is tested and placed at the proper entry level on a series of objectives in reading or mathematics covering six years of school. The pupil is tested further to diagnose specific skills that need to be mastered in the level. Then the pupil is given directions as to which materials to use and in which order (this is the prescription). Both the pupil and the teacher participate in evaluation of the pupil's progress. Many of the materials used by the pupil are self-instructional. Finally, the pupil is given a posttest on the skill and a new prescription based on the test results.

The instructional materials are at present undergoing extensive revision and expansion so that future operational descriptions, especially of the IPI reading program, will be considerably different even though the basic approach -- diagnosis, prescription, and evaluation -- will be continued. Procedures will thus differ somewhat among first, second, and third generations of materials, and among the different subject

areas. Therefore the following description of an IPI science program is given, since no one composite description would accurately reflect all the situations.

IPI in operation. These procedures were observed in one classroom using the IPI science program called Individualized Science:

Twenty-three children entered the room which was set up as a science center, and they opened their folders and began working -- some in groups of two to five, others independently. The children were following directions in task plans to accomplish specific objectives assigned on the basis of placement test results. Some children were being instructed by audio tape, whereas many had opted to use the written form of the same material. Most of these self-instructional lessons incorporated many manipulative activities, including use of chemicals, measuring devices, models, and scales.

Chris, without assistance from the teacher or aide, had just read on his task plan which lesson he was supposed to start. He removed from the rack where the lesson sheets were stored, the appropriate one as indicated on his task plan. He then removed from the tape storage area a box containing weights and a cassette tape. Going to a table on which were placed a tape player and a scale, he put the tape on the small cassette recorder and listened to the detailed instructions on use of the weights. Chris answered various questions in writing on his answer sheet and later checked them himself. He was obviously able to manage much of his learning by himself even though he was only in the third grade.

During the hour-long science period, the teacher met with students

individually to answer questions, to assist in some of the more involved experiments, and to provide follow-up work to children who had reached a similar point in their programs.

Other students had reached points in their plans that permitted a choice of the type of additional work each wished to pursue related to the previous lesson. One boy, Michael, chose an illustrated folder which gave directions for making a wheel out of a small aluminum pie pan as part of a system for converting heat energy into kinetic energy. The folder also included pertinent and challenging questions about the experiment. At each step in the experiment, Michael wrote his observations in his notebook.

Two students were making shapes out of tinker-toys; several children had chosen to read stories related to their work; and some were playing a science learning game. An aide assisted students in setting up equipment; this person also was observed keeping a running inventory of supplies, many of which were consumable.

In addition to checking their own work, pupils were also maintaining records of their progress on a profile sheet in their individual folders. The teacher could readily check any pupil's point in progress by looking at the progress chart.

The teacher had a separate record for each child, too, but this did not require a great deal of time since so much was being handled by each child. Whenever possible, children were also deciding for themselves which sequence they would follow in a given set of activities where the order was not critical. As a result of the responsibility given children for many of the procedural aspects (and they had to be taught all these

activities in a thorough orientation program), the teacher spent most of the time interacting with children on substantive rather than procedural matters. While the noise level was rather high, it was mostly "productive noise" that one would expect from interested learners involved in a multitude of different instructional activities at the same time.

Even though the science program is thoroughly and carefully structured, there seemed to be many ways for providing each student with the opportunity to make choices and to be responsible for his or her own learning. In sum the emphasis in the class was definitely on learning rather than on teaching.

Evaluation comments. The EPIE evaluation report (1974) suggests that IPI may be described as materials-centered rather than teacher-centered, individual-oriented rather than group-oriented, and based on the theory underlying programmed instruction. Thus many of the instructional materials are self-instructional, not requiring frequent help from the teacher. Project PLAN* and IPI are similar in relating objectives to tests and instructional materials. PLAN* utilizes existing materials while IPI relies more upon newly-developed materials. The sequencing emphasis among objectives is somewhat heavier in IPI than in PLAN*.

While PLAN* organized instruction around selected materials, IPI created new packages consiting of objectives and new materials. IPI was rated as using more self-instructional materials than did PLAN*.

The EPIE evaluators found that IPI pupils came to prefer individual over group activities, and this preference was reinforced

in the program as individual progress thru the program was plotted on record sheets. The reading program requires more group activity than the original mathematics or science program, but EPIE could not determine whether children's attitudes were different among programs. EPIE described IPI activities as reactive rather than initiatory due to the lack of pupil-initiated projects. IPI was said by EPIE to be committed to the concept of fixed, pre-selected goals rather than to emergent goals. If this characterization is correct, a school might wish to consider which orientation it prefers as a part of its decision-making procedure. If pin-pointed goals are preferred to more vague goals, a school might incline toward IPI.

Most schools report that the burden of record keeping is the most serious operational problem with IPI. Money for aides or other added personnel is usually required. Few schools adopt all available IPI curriculum areas because of the burden of record keeping. One school may adopt the reading or mathematics and another school may choose science or social studies.

EPIE noted in IPI, as in PLAN*, the absence of affective objectives. EPIE described the outcomes as "limited but predictable" in reference both to the emphasis on lower levels of cognition and the lack of affective objectives.

EPIE reported that the pupils were reluctant to deviate from skill sequences in order to work on extra learning activities, as the extra activities were viewed as retarding progress on the goal of completing a segment of objectives. EPIE judged that such a procedure might in some instances reduce generalizing experiences and thus interfere

with full mastery of concepts in favor of learning a "verneer .... of right answers." On the positive side, however, EPIE conceded that a carefully developed skill sequence may reduce the amount of "repetition without learning" that is often encountered in conventional instruction. Later versions of IPI material vary the programmed response mode to break up the repetitious responding called for in earlier materials. In science, the addition of manipulative materials helps accomplish this aim.

Summative evaluation results quoted by EPIE indicate that IPI pupils score as well or better than non-IPI pupils on standardized tests, achieve higher scores on IPI tests, and have a positive attitude toward school and learning. Parent reactions also are favorable to IPI. These findings need to be weighed against the other issues covered by the EPIE evaluators.

Costs. Suggested producer's costs for IPI as reported in an EPIE report (1974), are as follows: for 150 children, the average cost per child for IPI math for the first year would be approximately $7.50, not including manipulative materials. For science, it is $10.80, including supplies and equipment. These figures do not include in-service training for teachers or salaries for teacher aides. It would be a severe jolt to the school budget if a school adopted all IPI curriculum areas, and it would be a burden to teachers. Gradual implementation therefore appears wise.

Individually Guided Education (IGE)

Description. IGE is still another approach for individualizing instruction. Basically, IGE is a model for changing the organization and

psychological climate of a school in ways that may facilitate any chosen specfic method for individualization. The organizational model encourages differentiated staffing that permits flexibility in meeting children's needs. Psychologically, the IGE model emphasizes shared decision-making at different levels -- among teams of teachers and aides responsible for 100 or more children, among team leaders and the principal, and among different schools in the same region. With respect to curriculum, one system which has been developed for use in IGE schools is a beginning reading program including a sequence of objectives, tests, a record keeping system, and files and teacher guides and some student activity sheets. However, most schools key their own existing materials to the objectives. Like IPI, the IGE reading materials are still being developed and refined.

IGE in operation. A typical operation for an IGE school involves teams of three to five teachers planning jointly for instruction matched to the needs of each of 90 to 150 children. An observer sat in on one planning session by a teaching team. Three teachers (one of whom was the team leader), an aide, and a student teacher were present to plan for reading instruction for 90 children.

The team leader had a card for each pupil which showed progress in elementary word attack skills as measured by objective-referenced tests. The cards had been arranged into fifteen groups by an aide in advance of the meeting. This had been accomplished by threading a skewer through coded holes in the side of the cards, each hole corresponding to one skill. If the skill had been mastered, the hole had been punched open and the card would fall out, leaving only cards for children who had not mastered the skill.

Factors other than skill mastery were being considered, such as whether the child could best receive the initial instruction in a group mode, or if he or she would profit more from independent study using a taped program or from tutoring by an aide or reading specialist. The teachers decided that a few children should be retested, and for others who appeared to have some type of learning disability, it was decided that the school psychologist would be asked to give special tests. All five people at the meeting seemed to know all 90 children well, and when any one child's problem was discussed, each teacher and even the aide contributed information based on experience with the child.

The following day the children were in the different skill groups that had been organized earlier. Each teacher had two groups of 9 to 18 children. Each teacher worked with one of the assigned groups for about 30 minutes and then with the other group. Children in each class who were not receiving teacher-directed instruction or practice worked independently on activities related to the assigned skills. The school is organized so that each child in the primary grades receives approximately 30 minutes of skill instruction daily.

While most of the children were in their skill groups working either independently or with a teacher, other children were being tutored by one of three reading specialists.

In the library/materials center, which included a large number of nonprint materials, several children were working independently or in small groups. Some had been assigned to specific tape programs which their teachers had decided would be more effective than group instruction, and other children were in the materials center because they had mastered the skills being taught in their groups earlier than had the other

children; these faster learners were reading supplementary materials or playing games related to the skills recently mastered.

In this school the teachers normally test their reading groups after two weeks of instruction, and then they re-group the children accordingly. Until this time, the daily planning sessions will be devoted to other curriculum areas.

Evaluation comment. The EPIE report (1974) agrees with the earlier comments in this chaper in describing IGE as an approach to team decision making and reorganizing the classroom environment. Thus there is less emphasis than in PLAN* or IPI upon specifying the learning objectives and materials, and there is less emphasis on specific methods for individualizing instruction. The focus on the needs of the individual, however, is the common element among all three systems.

Due, perhaps, to the less prescriptive nature of IGE, the EPIE evaluators made fewer criticisms than they made of PLAN* and IPI. The reader must judge for himself, however, whether the EPIE evaluators were also biased against PLAN* and IPI. When a program commits itself to the task of specifying objectives, materials, and procedures, it opens itself to more specific criticism than if a less prescribed curriculum were offered. While EPIE criticized the level of cognitive activity growing out of both PLAN* and IPI, it appeared also to react somewhat more strongly against the behavioristic theory underlying IPI. Yet it labelled the absence of a consistent theory base in PLAN* as both a strength and a weakness. It thus seems difficult to escape the conclusion that EPIE evaluators were looking for more of an open or humanistic system, which perhaps they found in IGE.

Summative evaluation data for IGE cited by EPIE were considered less extensive than desirable, but one study of results of the reading program for 23 schools indicated better word attack skills for IGE pupils than for comparable pupils in the same schools as measured a year earlier without the word attack program. Other evaluations relate to the attitudes of pupils and staff toward IGE as a whole. These reactions are generally favorable, but as the EPIE report concludes, probably correctly, "IGE is whatever a school makes of it."

Cost. The Wisconsin Research and Development Center suggests that to start in IGE, at least $10.00 per pupil for two years will cover the added costs of one aide for every 150 children, higher pay for team leaders, and additional instructional materials. This figure does not include any teacher-training materials or consultants' fees.

The Problem of Classification of the Three Programs

To conclude this overview of the three nation-wide individualized instruction systems observed, two points need emphasizing. One is the great amount of variation in the ways programs are implemented in schools; the second point provides one reason for the variation: implementation and operation are in the hands of people who ultimately determine not only the local flavor of a program, but how well the resources are utilized to enhance children's learning.

Due in part to the above factors, the authors decided against presenting a classification scheme by which one would check cells in a matrix to attempt to summarize the main features of the three national systems described in this chapter. Many such classification schemes were

considered, but the conclusion was reached that it would be necessary to use the scheme only for a specific school or classroom, not for the program in general. Another problem was that to be complete and accurate such a scheme would require too many descriptive categories -- probably at least 100 rather than the dozen or so that would be more manageable.

Other writers have attempted such a classifying scheme, including Edling (1970). However that scheme appeared too general to be very descriptive, and the present writers did not feel they could apply it unambigiously to these three national systems. Since this conclusion was reached, for the national systems described in this chapter, no attempt was made to use a classification scheme for the locally developed programs described in Chapter 3. However, readers who would like to see such a classification effort may refer to the Edling report or the one by Hull (1973).

In place of a classification attempt, earlier in this chapter comments on the three national systems have suggested some other possible descriptive categories which might be of use to others who may wish to try a classifying scheme. These are:

1. Degree of specificity in defining the objectives.

2. Range of levels of cognitive activities associate with the objectives.

3. Frequency and adequacy of tests used for placement and for monitoring of pupil progress.

4. Number of alternate materials and activities provided for each objective.

5. Degree of prescriptiveness or openness in specifying sequences and methods.

6. Degree of emphasis upon team teaching and shared decision making among school staff members.

7. Degree of pupil choice in selection of objectives.

8. Degree of emphasis upon enrichment vs. basic skills.

9. Degree of pupil self-initiated activity.

10. Method of record keeping; use of computers.

11. The type of theory base for the curriculum.

12. Degree of use of self-instructional materials.

13. Use of new materials vs. on-the-shelf materials.

14. Methods for avoiding waiting time or "down time" when a pupil needs help from the teacher.

15. Frequency of making new prescriptions for the pupil.

While some of the above descriptive variables were used earlier in this chapter to make some comparisons and contrasts among the three systems, the authors would not feel comfortable in attempting to put this in the form of a classification scheme in summary chart form, for either the national or the locally-developed programs.

In summary, it appears that the details of application of any system vary so much from school to school and from teacher to teacher that careful efforts to describe fully are preferable to attempting to describe by merely classifying. The authors preferred to attempt to give composite pictures of typical applications of the national systems and to describe specific schools and classrooms in the case of locally-developed systems. The field reviewers have helped to make these descriptions as accurate as possible.

Chapter 3:

Descriptions of Selected School Programs

In this chapter there is a change from "composite" or "typical" applications of the three national systems to descriptions of specific applications by selected schools. Also described are some locally-developed systems, and mixtures of national and locally-developed components as developed by particular schools or school systems.

Walter T. Moore Elementary School (K-5)

Tallahassee, (Leon County) Florida

History of Program

The school building was constructed in 1967 in the "pod" or "open space" construction style.

Under a Title III project, program development was funded from 1970 thru 1973 under the name "New Adventures in Learning" (NAIL). This is a language arts program, K-3. In the spring of 1972 the project was evaluated by USOE as innovative, successful, cost effective and exportable. It was funded as a National Demonstration/Diffusion Center from July 1973 to June 1975.

The school has conducted one-week training sessions for the personnel of adopting schools from several states, and it will next turn to training of teacher trainers for still broader diffusion effects.

This school was the first open space school constructed in Leon County. It is a model in arrangement, furnishings, materials, programs, and personnel. Its location brings a balanced mixture of black and white and urban and rural pupils, thus providing the heterogneous pupil population needed for a real test of an individually determined learning

program.

The school is arranged into 7 large areas, or pods, of which 3 are demonstration areas and 4 are non-demonstration areas; each area is comprised of at least two grade levels. Special areas for music, art, etc., are separate from the other 7 areas.

Social studies and science are an integral part of oral language in the language arts program. Mathematics is also individualized.

A first year trial of a completely individualized program with extensive personal conferences between teachers and pupils was abandoned due to achievement gains no better than under conventional instruction. Under the present combination of individual study and large and small group instruction, gains in measured skills became much more impressive.

Components of the Program

Key components of the present program are:

1. Initial diagnosis, based on a variety of appropriate tests and observations, to determine each child's level of language development.
2. Individual prescription of activities in reading appropriate for each child's learning needs and learning style, all keyed to a permanent individual reading skills record extending to grade 8.
3. Usage of oral language, reading, and psycholinguistic exercises, as appropriate for each child's profile.
4. Continous monitoring of progress, permitting formation of small groups for short periods of time as an improvement over the conventional "tracking" extending over an entire year.
5. Use of behavior modification techniques to encourage academic and

social maturity and to minimize discipline problems.

6. Frequent use of Friday as a child-planned day to provide opportunity for either more enrichment or for catching up in skills progress.

7. Use of alternate materials and sequences as a second from of pupil choice and as a facilitator in forming groups.

8. Self pacing for individually prescribed activities but group pacing for teacher-conducted activities.

Project Findings

Of 310 pupils, K-3, the number scoring below 1.4 on Gilmore Oral Reading Test dropped from 58 per cent to 27 per cent by the end of the project.

In the first year, 20.7 per cent were not expected to read due to low mental age; this was reduced to 10 per cent by the third year.

In 1970, only 10 per cent read at or above grade level; this was increased to 50 per cent by 1973.

Further conclusions were:

1. Without adequate direct teacher instruction, no known materials produced satisfactory gains for pupils of this school.

2. Word attack must be combined with vocabulary and comprehension development to achieve satisfactory results.

3. Significant growth in all measured skills (including IQ) was experienced by the program regardless of the degree of retardation at the outset. (This does not include permanently handicapped children, such as the blind and deaf, who receive special attention, and whose gains are not included in the above results.)

Dougherty County Schools, Albany, Georgia

Program Description

This school district, with Title I funding aid, developed a compensatory program in reading skills for the most disadvantaged children whose tested reading level was far below grade norms. The selected children go to the Title I classroom for 50 minutes per day of individualized instruction as a supplement to the basic reading/ language arts program conducted by regular teachers.

There is one Title I classroom in each of 16 public schools plus one parochial school. Each of the 17 teachers, assisted by a paraprofessional, teachs an average of 102 students per day in groups not exceeding 17 pupils each.

These 17 teachers had an initial workshop on how to conduct the program, supplemented by continuing in-classroom training and assistance by consultants and supervisors.

Pupils are selected for the program on the basis of reading test scores and recommendations of teachers. Some pupils stay a year or more in the special program. Some children achieve 2 or 3 years' gain in skills in a one-year period or sooner, but a few gain no more than in regular classes.

The program operates by individual diagnosis and prescription. This enables teachers to assign tasks that children need and are ready to master. A permanent record card, K-8, is used to record mastery of skills listed on the card. While there is a general orderly pattern of progression from elementary to advanced reading skills, this program is by no means a linear, lock-step pattern. Teachers have found that different children can progress by somewhat different sequences of

prescriptions. Teachers use various options in sequencing as well as in selection of materials.

A prescription sheet enables the teacher to plan the work for each child for as much as a week at a time. The child learns to locate the assigned materials by reading the codes written by the teacher on the prescription sheet. Sometimes the assigned materials are programmed instruction booklets, but sound tapes combined with workbooks are also used, and also books for reading pleasure. Commercially available materials are used as much as possible.

Children new to the program receive small group instruction on how to follow the prescriptions and how to locate materials and operate simple sound recorders. The younger ones, of course, require more help in these matters than do older children, but all soon learn to do these things without help, thus allowing teachers and aides to concentrate on giving academic help rather than procedural help.

A given set of materials is often used in different ways for different pupils. For example one child may use a programmed booklet to master an objective with no help from the teacher. Other children must be led through the same program by the teacher repeatedly, so that they learn both the procedure and the reading skill. Some children will receive such personal tutoring several times during an hour; others need no such help.

It is common, in both conventional and individualized classrooms, for teachers to speak of "eye contact" as an important way of monitoring the pupils' activities. In this Title I program, some teachers use "ear contact." They ask all pupils to do all their individual reading aloud,

so the teacher can detect when a pupil needs help. To the visitor uninitated in such a procedure, it appeared amazing that the teacher, while helping one child in a tutoring fashion, could hear and register the needs of other children for the teacher's help. These youngsters often all read at top voice, yet the teacher and the aide were attuned to the cues signalling need for correction or help. Apart from its use as a monitoring device, this technique might be useful to revive the premium which years ago was placed upon oral reading skills.

Results

This program has been validated by USOE as an exemplary Title I program.

Morgan (1974) summarized the results of this Title I program for the 1973-74 school year, for 1120 Title I pupils in 12 elementary schools, grades 1-6. Results are quoted here, first in terms of reading gains, and then in terms of dollars per objective gained.

Since the children were selected for the compensatory program because they were the lowest achievers in reading, there could be no control group within the district for comparing the regular program with the special program. Therefore gains scores were used, so that gains for the pupils in the Title I program during 1973-74 could be compared with their own gains during previous years in the regular program.

Since there was no gain score for the previous year for those who were first graders in 1973-74, the differences quoted between prior years and the 1973-74 year refer to grades 2-6. However gains during grade 1 were measured.

Significant differences at the .01 Alpha level or better were

obtained between the gain scores for the compensatory program and prior gains for the same pupils in the regular program, at all grade levels, on each of the following tests: Gray Oral Reading Test, Slosson Oral Reading Test, and the CREAD Test, Form A. These differences were not only statistically significant, but they seem large. For example, taking gains on the Gray Oral Reading Test (Morgan, 1974, p. 45, Table 1), here are the differences:

Grade	Mean months Gain per month of Treatment	Previous mean Gain per month in School
1	.799	0
2	1.151	.247
3	1.244	.441
4	1.768	.261
5	1.673	.425
6	1.298	.462

Cost per pupil of the regular language arts program was computed at $16. per month, and the special treatment was calculated at $24.38 per month. Normally only the cost of keeping a pupil in school is computed.

But Morgan also computed the cost per pupil for each month of gain in reading skills; on this basis, the special program actually cost less than the regular program! As Morgan expressed it, "It actually cost less to teach better."

Morgan pointed out that the above results are for a compensatory program, offered to children for 50 minutes per day in addition to regular instruction. The results should not be generalized to other situations.

Even so, the mean gains were impressive, as well as cost effective, if one counts cost in terms of achievement gains rather than simply time spent in school.

The data for 1973-74 were only for grades 1-6. The program is now in effect in some schools through grade 9. The observer formed the subjective impression that for the longer achievement-retarded ninth graders, only small gains may be brought about. Any possible gains in literacy are of course desirable for those pupils, but the advantages of starting at a younger age are probably greater, and might be demonstrated by later data. The ninth graders had probably experienced failure in reading skills for so long that their motivation for the program was lower -- at least it seemed so to the observer. The ninth graders appeared apathetic as compared to the younger pupils.

Morgan's report (1974) cited evidence that other compensatory programs typically have not produced the magnitude of gains found in this program. This fact makes this program's results of added significance and worthy of close study by interested schools. While other programs reported here may be equally successful, often the careful research documentation made by Morgan is not done. This program would appear to merit the status of a demonstration program, just as its merits have already been officially recognized by the designation of exemplary program.

Duval County Schools, Jacksonville, Florida

Program Description

Individually Paced Instruction (IPI -- not to be confused with the

Pittsburgh-developed Individuallly Prescribed Instruction) has been locally developed over the past six years by interested K-6 principals and teachers under the leadership of an associate superintendent who provided the initial plan and continues to provide resources for development and implementation.

The subject area most thoroughly individualized is reading. Mathematics instruction is now being individualized following the basic system used for individualizing reading. At present 31 elementary schools are using the IPI program for reading (of 130 elementary schools in the district).

A sequence of reading objectives has been provided by the district with a series of criterion-referenced pre- and posttests. Teachers in schools interested in developing the IPI system have participated in workshops to "key" existing materials to the objectives. The district has then provided schools participating in IPI with catalogues listing these "keyed" materials. Teachers also "key" other materials they have available in their respective schools. As a result of the plan to involve classroom teachers in selection of materials, there is considerable variation among teachers even in the same school in the materials and methods they use to attain the objectives, although the objectives themselves do not vary among schools.

The organizational structure for the IPI schools has not substantially changed -- students are placed in classes at different grade levels as in a conventional system. Within each class students are tested to determine where each child is on the sequence of objectives for reading, and in any class at any grade-level there is considerable variation among the

objective assigned to various pupils. Whenever possible students who are working on the same objectives are grouped together to receive initial instruction -- often teacher-directed. Then the students work independently until they master the objective and are regrouped. The size of groups differs as well as the length of time any group stays together. Some teachers group on the basis of a single objective, while others use their judgment as to when several objectives, which are closely adjacent in the sequence, can be used for grouping.

An important feature of the program is the provision for aides to help keep records and to organize and assemble materials for the teacher. Aides were also observed conducting individual tests and performing direct tutoring functions under the supervsision of the teacher. Also each IPI school visited has a master teacher who helps coordinate the testing, assembling of materials, utilization of aides, and training of teachers in implementation of IPI. This person also serves as a liaison between the district IPI director and the school.

Stages in Implementation

Since this school district is a very large one, and since the individualization program was developed locally beginning with leadership in the district office, it may be useful to readers to note the stages by which this program developed.

1. In 1968, the associate superintendent for curriculum began to introduce nine principals to the concepts underlying individualized instruction.

2. During the next year, a set of objectives and tests were developed, partly by modifying existing materials. Personnel of nine schools were

were given an opportunity to examine or make limited use of these materials as part of their orientation.

3. A workshop was conducted, with assistance from consultants, to further orient school personnel in methods of systematic planning.

4. The district hired central staff personnel for leadership roles, and obtained supplementary funds (local, State, and Federal).

5. The individualized reading program was introduced into one school at first, then into other volunteer schools.

6. As Title I funds were obtained, the program was expanded into non-volunteer schools, where it was also well received and implemented.

7. Continuing training sessions are offered by district staff for personnel at newly adopting schools.

8. The program is continuously assisted, monitored and coordinated by the project director of IPI and a master teacher at each participating school.

9. Both district and school personnel continue to "key" new materials made available for each objective.

10. Supplementary funds have been approved by the school board to provide a computerized record keeping system to reduce the amount of time teachers must spend in keeping records.

Cost and Effectiveness Data

Data provided by the district office illustrate the principle that student achievement is not always directly proportional to costs involved. The nine schools which first implemented the individualized program did not have the additional personnel and assistance later provided to four other schools under the Emergency School Aid Act (ESAA) yet in

the associate superintendent's view, the quality of instruction and the use of the IPI system are higher and better in the nine original schools. This difference may be due in part to the "volunteer" status of the original nine schools, and in part to school population differences. Yet the achievement data do indicate some improvements from the IPI program in the other four schools, as summarized below.

During the 1973-74 school year, for the four ESAA schools mentioned above, the district set the objective of increasing reading achievement through use of the IPI reading system. Specially designed objective-referenced tests which measured vocabulary, word analysis, comprehension and oral reading skills were used to determine whether this objective was met. Based on desired gains set as criteria, first and second grade pupils met the objective, but for grades 3-5, only the fourth grade of one school and the fifth grade of another school met the objective. The older pupils (grades 3-5) achieved more objectives than did the younger pupils (grades 1 and 2), but since their criteria were higher, they did not achieve the objective. Yet on the Stanford Achievement Test (SAT), fourth and fifth graders were growing in reading achievement at a faster rate than first and second graders. Thus the criteria for "success" may have been set too high for the older pupils, or they may have had a large achievement deficit to overcome. In general, groups which scored well on the IPI tests also scored well on the SAT.

Special IPI costs for the ESAA program for the four schools (2,110 pupils), averaged $186.54 per pupil. A possible hypothesis, not testable by these data alone, is that it takes more money to remedy large achievement deficits than it does to satisfactorily operate either a conventional

or an individualized program for more normal school populations.

The relatively high costs cited for four schools for this locally developed program may become less as costs are armortized over more schools each year. Also fewer aides will be needed as record keeping becomes computerized. The district office estimates that after the district acquires its own computer, one-time installation cost will be $7,500. per school, and subsequent yearly operation will cost $3,000. per school.

Manuel de Vargas Elementary School

Cupertino, California

Manuel de Vargas is one of five schools (in a district of 42 schools), participating in a Differentiated Staffing Project. For this program, the State legislature has allowed schools to increase the state-mandated teacher/pupil ratio of 1:30 to as high as 1:45. This is done by reducing the number of certified teachers and allowing the schools to use the monies saved to employ aides -- usually three aides for each teacher replaced. The total effect is to decrease the paid adult/pupil ratio to as low as 1:18 with no additional funds required for personnel.

The program, in effect since 1971, has been evaluated by the district. Two of the findings are that (1) over 70 per cent of the teachers' time is spent providing instruction to children individually or in groups of 10 or fewer and (2) teachers give twice the amount of instruction in a one-to-one relationship as that given in the conventionally staffed schools.

Flexible use of personnel is characteristic of the de Vargas program. For example, the team responsible for all the children in grades 2 to 4 is composed of three coordinating teachers (with each responsible for either the budget, the objectives, or the curriculum), two regular

full-time teachers, two part-time teachers, and six instructional aides. For this particular team the adult/pupil ratio is 1:12.

Partly as a result of constant monitoring of each child's progress, there is much re-grouping (sometimes daily) of children for reading, mathematics and language arts instruction. The principal reported that differentiated staffing permits the teacher to direct learning rather than to teach per se.

Learning centers are an important part of the de Vargas program; they are used both for enrichment activities and for providing the major instruction in areas such as English.

De Vargas School is one of several schools in the district beginning to use the System for Objective-Based Assessment Reading (SOBAR), which was developed by the University of California at the Los Angeles Center for the Study of Evaluation. The teachers in the Cupertino schools made some modifications in the system. The reading system includes objectives and tests which are organized to be readily computer managed.

This school uses a system for planning each child's yearly goals. In every curriculum area, the student, the parents, and the teacher work out a plan early in the school year for the child to follow. The plan includes objectives selected by the teacher according to the child's needs as well as objectives the child selects for enrichment.

Then during the year the student's progress is noted on the chart which shows how much has been accomplished as well as what is projected. The projection chart is not binding; it can be modified during the year depending on how the student progresses or how interests change. The charts are used by teachers and students to set goals, to monitor progress

in attaining them, and to report progress to parents.

Differentiated staffing, team teaching, computer-managed instruction, learning centers, and long-term planning, then, characterize the practices incorporated into the de Vargas program of individualization. Although the program has been in operation for several years, it is still developing and changing.

The 111th Street School, Los Angeles, California

The 111th Street School is in Watts, a severely depressed, all-black section of Los Angeles. Maintaining staff and generating enthusiasm in the schools in Watts are difficult. Until the present principal came to this school seven years ago, there had been five principals in the previous four years.

Now the school has been designated by the State Department of Education as one of two statewide models for individualized instruction. The school is an IGE school, but many aspects of the instructional program had been developed at the school before it became involved with the IGE program. The principal feels that IGE provided the thread of continuity in the program already developed, especially with respect to the record-keeping system and organization of the school.

The present principal has become the leader of the staff and students of the school and changes and improvements have been worked out jointly by him and the staff.

The school follows the IGE system of dividing the pupils into primary, middle and upper units, and planning instruction for all the children in one unit, often nongraded, utilizing a team of teachers and aides. Each unit is led by a teacher who coordinates activities and assists the

principal in providing instructional leadership. The unit leader normally does no direct teaching.

The integrated reading program is partly funded by ESEA Title I funds and partly by the district. Some rooms are set up as reading centers where intensive remedial instruction is provided for all children who score within the lower quartile of the standardized reading test used in California. While instruction is provided in the regular classroom, usually in small groups, the weaker readers work on a one-to-one basis with a specialist in the center.

Peer tutoring is encouraged; it has been found that grouping fast fourth-grade children with slow sixth graders is beneficial to both age groups.

Even though there is team teaching and movement of children from one teacher to another, especially in the reading skills part of the program, the schedule does not seem to be rigid and confining. Word attack and comprehension skills are taught in the same block of time (1 1/2 hours), and a child who tests out of a skill group can work on a comprehension objective and will not have to mark time until new groups can be formed.

One innovative feature of the program involves packets of simple readers that each child takes home and keeps. Another procedure is to involve parents in tutoring their children. In parent-teacher conferences, a plan is worked out whereby the parent is given responsibility and instruction on ways to help the child attain specific skills.

The most ambitious project that will soon be operational is a new

program in social studies, arranged in modules so that reading skills are practiced and measured in various content areas in normal studies. Each module contains an objective, an objective-referenced test, a learning guide, and books which are keyed to the learning guide.

In brief, the 111th Street School is exemplary in implementing on-going programs and in continuing to expand the program into new areas.

Talbert School, Fountain Valley, California

All 19 schools in the Fountain Valley School District have implemented the district's program for individualization, which includes distinctive features as observed at Talbert School.

A large open area serves as a learning center adjacent to classrooms. In the center, children work in groups or independently on tasks assigned by the classroom teachers. Pupils' study is monitored by a teacher, who is permanently assigned to the center, and by aides and parent volunteers. The center houses a large number and variety of instructional materials, print and nonprint, as well as various audiovisual devices.

Classroom teachers and the teacher in the learning center develop common learning programs for small groups of children having similar needs. Most schools in the district employ three learning center teachers, each working with children in either the primary, middle, or upper grades. The center provides work in reading and mathematics as well as a series of learning stations in other curriculum areas.

Some of the activity stations in the center are used as rewards for good behavior. These stations are monitored by a classroom teacher on a scheduled basis.

The learning center teachers have a variety of duties. They work with four to seven teachers in developing and implementing the regular individualized program, conduct reading clinics for children with serious reading problems, and organize appropriate programs for gifted children. The learning coordinator serves as a team leader in chairing the weekly planning session with the teachers and aides on the team. One day a week is shortened to provide this time, although the children's total time at school each week is not decreased.

In Talbert School, the principal has encouraged each of the three learning coordinators to work with his or her group of teachers to develop a plan for assessing needs, setting priorities among needs, developing objectives, discussing alternative solutions, setting a time schedule for tackling each problem, and planning for regular monitoring of progress. The principal develops a plan for the entire school based on each team's plan.

These procedures help teachers to focus on important, mutually agreed upon problems and solutions. As one learning coordinator said, "There is less talk about 'neat' ideas and more positive action."

Learning coordinators are important also in implementing and expanding the Fountain Valley Reading Support System, which includes a series of reading skills, objectives, criterion-referenced tests, and a system to monitor childrens' progress as they move from one skill to another. A guide is provided keying commercially available materials to the objectives. The tests are presented via audio-tape cassettes, and the response sheets are designed so that an aide can easily tell which skills have or have not been mastered. This Reading Support System and a similar system for

mathematics were developed, tried out, and revised by teachers in the district, before being made available to other schools. These two systems have been adopted by schools in almost every State.

The school buildings in Fountain Valley have been designed to facilitate the smooth, efficient operation of the instructional program. Children can move very quickly from the classroom to the learning center, and each classroom can easily be sealed off from the others or from the center, thus providing great flexibility in the use of space. The school buildings in Fountain Valley are basically the same, all having been constructed since 1963; they combine the best features of open-space and conventionally designed schools.

In conclusion, the Fountain Valley program is noteworthy in the way the learning center is being utilized as an integral part of the instructional program, in the manner in which the staff is organized into teams lead by the learning center coordinators, and in the functional design of the physical facilities to facilitate the instructional program.

Costs.

Cost data provided by this district are total costs, and do not separate out costs for special features of the program. The per-pupil cost for 1974-75 was quoted as $825.

St. Bernard Parish (County), Chalmette, Louisiana

This program involves individualization in a number of curriculum areas including reading, language arts, social studies, mathematics, and science, as represented in a comprehensive set of curriculum guides that include objectives and detailed activities. Each school in the system is nongraded

to facilitate continuous learning. Generally, the teachers specialize in one curriculum area, and the children move during the day to different teachers' rooms. Although the program has been largely developed and disseminated by the district, each school has implemented it in different ways and with different degrees of success.

The superintendent emphasizes that the program is not dependent on supplementary funds. In fact, the parish (county) spends less per child per year than any other parish in Louisiana. On the other hand, teachers' salaries are the third or fourth highest in the State.

This economy has been achieved by good management. For example, the district now plans to provide duplicating services to the schools through a printing shop established under a federally funded program to provide vocational-technical training. The vocational-technical students will be learning a trade and at the same time producing needed quantities of printed materials. Teachers in the schools will no longer have to duplicate their own materials.

There are fewer aides in this district than in most districts with individualized programs. To make the program work, teachers supplement the one assigned planning hour per day with many additional hours outside of class. All the teachers working in the same subject area have their planning periods scheduled at the same time.

Morale is very high in the school which has gone farthest in individualizing. The principal of this school is an instructional leader. He works with teams of teachers during the planning periods and helps maintain the spirit of hard work and dedication which pervades the district. This spirit includes cooperation and an openness for ideas.

Teachers are given the opportunity to visit different schools, to gather new ideas, and to expand on them.

Plans are continuously made for bringing about further improvements.

Conwell School, Philadelphia, Pennsylvania

The Russell H. Conwell Middle Magnet School is the only "magnet" school visited during this study. The term "magnet" means that any child in Philadephia of the appropriate age (for grades 5-8) may apply for admission. The actual enrollment includes pupils from all sections of the city.

Applications are screened by a faculty committee, and one ground rule is that at least two members of the committee must have interviewed any successful applicant. The school seeks children of normal rather than exceptional ability. The school does not specialize in methods for either the low achiever or the high achiever.

While the observer did not discover what motivates pupils (or their parents) toward this school, it may be inferred that it is the program, not the school plant, which is an important attraction. The school plant is old and it is located in a white, lower-middle-class neighborhood that is a mixture of homes and manufacturing buildings, many of both type buildings standing unoccupied. Children who live over a mile from the school are provided free public transportation tokens, as the school does not operate any busses. The pupil population is 37 per cent black.

The school program has been carefully designed to provide achievement in both basic skills and enrichment pursuits. To insure achievement in skills before graduation, all pupils are given special tests in the seventh grade. Then those who need special study enter a computer-managed skill

program, in which the computer receives test data and issues prescriptions. The pupil uses the prescription to locate keyed self-instructional materials stored near the computer terminal. In this study area, operated a few hours per day, a teacher is availble to provide needed assistance. Most of the study units were prepared by teachers in the school. Due to this skills program, graduates are reported to do well when they go on to other schools.

Within the regular instruction for grades 5-8, there is a heavy emphasis upon both enrichment and individualization. Art work by students is evident on walls throughout the school building (and in an Annex building two blocks from the school). The cultural arts program among others, is located in the Annex. There, children study foreign languages integrated with the study of the foreign cultures. Art work is used especially to illustrate the cultures. Based on these introductions to languages and cultures, a child in the eighth grade can elect more advanced study of one foreign language by more conventional methods.

In courses in business, industrial arts, and home economics, the pupils can design projects of their own interests, such as learning how to write a letter to apply for a job, cooking, sewing, woodwork, etc. This form of individualization through projects complements the more prescriptive form of individualization described above for skill development.

A third form of adopting to individual differences in this school is the operation of the same basic program in large team teaching areas (where old walls have been removed) and in the normal-sized self contained, ungraded classroom. A pupil may remain in either as long as he feels secure, and he may change from one environment to the other when ready.

It would appear that the three forms of individualization described for this school are well designed to meet the goal of the school -- to

give a well rounded education to average children.

Costs and Results

The school receives no special funds for its program. Students are presumably highly motivated because they must apply for admission. At time of entry pupils read at the 41st percentile (compared to the city average at the 30th percentile). When they leave, they read at the 54th percentile (compared to the city average at the 30th percentile).

Powel School, Philadephia, Pennsylvania

The Powel School, in Philadelphia, Pennsylvania, has children from 3 to 14 years of age in three different programs: traditional (K-6); open classroom (pre-school - 8); and a project program.

Under the project program an entire group may work on the same project, but specific tasks and levels of expectancy are set for different pupils according to their entry capabilities. Thus children have some options in selecting strategies and media for subojectives assigned as a part of a group project. Evaluation of skill development for each child is accomplished within the context of the projects.

Wednesday afternoons are reserved for fun and enrichment activities of the child's choice. The child may take a walking field trip, work on electric circuits, or make works of art.

In the self-contained classroom, where skills are conventionally taught, there is a play period each day. Activities include arranging building blocks, stringing beads, playing chess, modeling clay, weaving, and sewing. No cost or achievement data were obtained for this school.

Chapter 4:

Planning, Operating, and Evaluating a System of Individualized Instruction - - Some Recommendations

The purpose of this chapter is to list and describe critical aspects of planning, implementing, and evaluating systems of individualization and to suggest some practices either observed in the 42 schools visited or suggested by the observers as a result of those visits.

To suggest a simple formula for successful individualization is, of course, impossible, and the topics listed below and discussed in this chaper are not simply a series of steps to be completed one after another. Rather they are listed in a general sequence divided into three parts -- planning, operation, and evaluation -- for convenience of discussion. Many of the steps are on-going processes; the sequence may vary, or, more likely, topics may be treated cyclically with considerable overlapping.

Aspects of Individualization

The Planning Stage

1. Origin of interest. Some schools have begun thinking about an individualized program as an outgrowth of discussion of their present problems and possible solutions. Some schools have opened discussions based on readings or visits to other schools. Sometimes a problem with a specific segment of the school population was of concern -- how to help non-readers or poor readers, or how to reduce dropouts, or how to adjust teaching methods for different portions of a more heterogeneous pupil population.

While a teacher or a group of teachers may initiate consideration of an individualized program, administrators must provide either strong support, both psychological and fiscal, or the administrators must become the leaders in the undertaking. In some districts, central office personnel were the leaders from the beginning; in other cases the interest filtered up from below, thus arousing the interest of district personnel.

In the case of the three nation-wide systems described in Chapter 2, the system developer or a diffusion agent initiated interest, either by inviting school personnel to assist in the development of the system or by inviting the school to participate in a field test. After the field test phase, publishers or other diffusers may have caught the schools' attention to the program.

2. Change strategy. Once interest is aroused in a leader or a group of school personnel, there may be a second investigation phase in which these persons consider whether to adopt an existing system, either a nation-wide system or a system developed by another school district, or whether to develop a new system locally. Often this results in adopting only certain components of an existing system, such as the objectives, the tests, the materials, or a computer program. In any case, there is almost always a local modification to any program components adopted from elsewhere.

Once the basic decision is reached -- adopt a system, adopt some components, or develop a new system in its entirely -- then a strategy for enlisting the support of other persons is needed. These other persons may include other teachers and administrators, other schools, consultants, the school board, the public, and funding agencies, State

and Federal.

One thrust of this change strategy thus concerns enlistment of fiscal and moral support and committment; other thrusts involve plans for developing or installing the system, and for preparing teachers and others for the roles that will be offered to them.

3. Needs assessment. In an ideal procedure, needs assessment could well be the first step rather than the third step. In any event, once some significant committment by the initators and/or administrators has been made, decisions need to be made as to whether to start individualizing in only one curriculum area and only in one school, or in several areas and several schools. (Chapter 5 discusses the factors to be considered in making these decisions.) The areas of greatest need might be attended to first, with plans for later expansion.

4. Objectives and achievement measures. Again, objectives and the necessary associated placement tests and tests for monitoring pupil progress may be adopted in whole or in part, or locally developed. It is in this area that much unnecessary duplication of effort may be taking place, especially in core skill areas where the needs have been widely agree upon. Perhaps much local development of objectives and tests in reading and mathematics, as it has taken place to date, could at least have been deferred until it could be determined that no existing components available elsewhere were suitable for local needs. It is very expensive, and often stressful, to ask teachers to develop these two system components, and it probably should be avoided when an adopted component (or a modification of it)

will meet local needs. Of course if no available program offers the kind of objectives desired locally, then local development of them is clearly required.

5. Keying. Every individualized system encountered employed some method of keying tests and study materials to the objectives. In some systems it requires a thick document to record all the keying that was done. Such documents often list as many as a dozen or more materials for each objective, even if some entries are simply page numbers in various books. In other cases, only one or two alternatives may be offered for an objective. Almost all schools do some keying of local materials even when the developer supplies other materials.

6. Evaluation plan. Placement tests need to be prepared so that the entry level for each child can be identified in terms of the total sequence of objectives. Tests are also needed over each objective in order to monitor pupil progress, even though some teachers may substitute their own evaluations for some of these tests. In addition, there should be plans for using results of these tests to detect parts of the program needing improvement (formative evaluation of the program). Finally, after a year or more of operation, there should be a plan for one or more summative evaluations of the program in order to decide whether to keep the program.

7. Classroom organization. Before a method of operating the program is attempted, there should be developed a set of assumptions about how space in the school will be used. These assumptions can guide the architectural plans for new schools, and they can reflect present realities for existing school buildings. Particularly needful are decisions about self-contained classrooms vs. open spaces (pods), libraries, learning centers, and method of access to stored materials. Methods of grouping pupils

need to be planned, and decisions about scheduling and staffing need to be made.

8. The management system. A system for managing the learning needs to include monitoring of pupil progress, prescription of new activities as each objective is completed, and a method of recording pupil progress. All pupils must be assigned such combinations of individual and group activities as the teacher can manage without conflicting seriously with the success of the learning.

9. Teacher preparation. Plans for preparing teachers and others for new roles must be made carefully, allowing sufficient time for an orientation phase as well as for observations and gradual introdution of changes. When possible, teachers should have the experience of assisting teachers already accustomed to individualization. Inadequate preparation of personnel can lead both to faulty implementation and negative attitudes. Seeing a program in operation appears to be far superior to lectures or other didactic presentations as a method of teacher preparation for first acceptance and then application of a new teacher role. If, after such careful preparation some teachers resist acceptance of a new role, experience appears to indicate that those teachers should not be coerced into the role. This is one of several reasons why some districts introduce a new system in only one school, with later expansion into others. Transfers can be arranged when it is desired that an entire school operates the same program. Many schools have both conventional and individualized instruction, thus reducing the number of transfers.

10. Other role changes. School principals also need time to change roles when a new program is introduced. Ideally, they should receive preparation early so they can assist with teacher preparation.

The role changes needed by teachers are so drastic for the uniniatiated that they need strong psychological support from the principal. Informed support is preferable to "blind" support. The principal, in turn, needs strong support from the district; this support may be given by a superintendent or by other central staff personnel, who themselves may first need to be given additional training. Most programs require also the training of teacher aides. This is sometimes handled by a master teacher or curriculum supervisors who may be located either in the school or in the district office. Some teachers even need training to accept an aide, especially when the aide is to provide more than clerical support.

The Operation Stage

11. Pupil orientation. It is the fortunate pupil who is introduced to the new program in the first grade, if not in kindergarten. Such pupils do not have to overcome conventional habits of dependence on a teacher for all learning in the school. They also accept the new program as the only known concept of "what school is like." The procedures of the program are easily learned, although they must be directly taught by the teacher. For older children, the transition must be made from conventional methods to the new methods. While enthusiasm for the program on the part of the teacher is desirable as an influence upon pupils, the mechanics of the program should be "learned by doing" more than by exhortation. It does appear that even in the most highly prescriptive program the pupils do learn more self-reliance for learning than is achieved by conventional instruction.

12. Diagnosis and placement. When a new program is introduced,

pupils need to be placed at whatever point in skill progress that is indicated by placement tests. This essentially identifies the objective or group of objectives which become the learners' first prescription. Then after the learning is started, frequent testing verifies progress or indicates need for remedial work. Frequent monitoring of progress is needed not only to keep the pupil placed correctly in the program, thus accomplishing individualization, but monitoring is also needed to insure continous success in learning.

13. Program of studies. Most programs encountered emphasize the need to design an overall study plan for each pupil, even in highly prescriptive programs in which a fixed sequence of objectives within skill blocks is typical. It is possible that this step in planning represents the greatest discrepancy between theory and practice. In project PLAN*, for example, the developer intended that each pupil's program be "tailor made" for the pupil, even though the program itself offers only a finite number of options. But some teachers undoubtedly use the same fixed series of objectives for all pupils, so that in practice, all pupils receive the same program, although the individually determined entry point and self-pacing are retained as planned, and perhaps materials for each objective may vary somewhat from pupil to pupil. So regardless of the original intent to allow variations in programs of study, sequencing, and materials used, some teachers may neglect any one or all of these intended options. The result could be merely a self-paced program. No quantitative estimate can be made as to how many teachers follow all details of the original plan.

Whatever the programs of study, daily planning is needed to keep all students in accordance with the programs.

14. Task plan. Some schools develop a standard form called a task plan. This is the form the teacher uses to communicate to the pupil the next assignment when the pupil has passed a test over the previous assignment (prescription of objectives and materials). The preparation of a new task plan supposedly is an indicator that the teacher has made a "diagnosis and prescription" as the basis for the decisions recorded in the task plan. Again, in practice, the prescriptions may be a standard set, for all pupils, or they may truly be preceeded by individual diagnosis and prescription. Consultants for the IPI system indicate that learning to make a good diagnosis and prescription in a highly flexible manner for each pupil is one of the most demanding tasks the teacher faces. Whatever the basis for the teacher's decision, the task plan is used to convey that decision to the pupil.

The frequency with which a new task plan is written varies among systems and among teachers from several per hour for a pupil to one per week for a pupil. This variation in itself may reflect differences in the detail in which objectives are described, and the degree of flexibility in sequencing. These two factors in turn influence the ratio of individual work to group work. High frequency of writing task plans can be a signal that the teacher hasn't yet learned the system, resulting in more solitary study by pupils, while moderate frequency will tend to be associated with more work in small groups.

15. Maintenance activities. These include plans for storage, access, and sharing of materials, replacement of expendable materials, indexing materials to match code systems used in task plans, and storage and maintenance of equipment. Some general estimate needs to be made of the number of different activities that may need to take

place simultaneously as individual or group activities, so that potential management problems may be foreseen. If the number of activities equals the number of pupils, an inflexible interpretation of sequencing has been made. If only one or two activities are typical in the plan, insufficient individualization is reflected. An inspection of such plans could distinguish between desirable variations among teachers and misconception of the intent of the developer of the system.

16. Task changes. Teachers must be prepared to modify a program of study when a pupil experiences failure or becomes listless. The teacher needs to decide the probable source of trouble, and change plans to provide a correction. Alternatively, the teacher may assign new materials and activities when the previous ones failed to lead to mastery of the objective. The teacher also needs to monitor pupil-chosen activities to provide for the pupil's learning style, yet also to lead to a variety of activities. A pupil who wants to sit for a week with the earphones in one corner of the room may need careful direction to other activities. Other changes in plans may be made to solve discipline problems or to promote social interaction.

Observations of the most skillful teachers in reading programs suggest the following as a composite view of a well-operating program: in one corner, a small group is listening to earphones and making responses in workbooks; in another corner, a group is listening to recorded stories; in another corner the teacher is introducting a group to a new task; in the central area of the room, some children are studying alone, some are reading to each other in pairs, some are playing games, and others are reading stories in books or taking

letter-discrimination exercises by programmed instruction. The teacher, while conducting the one group activity, sees and hears what other children are doing. Occasionally the teacher must interrupt the group session to speak to a child across the room, and if necessary, go to another area to correct a situation. Some teachers rely upon positive reinforcement for control and discipline; others use conventional correction methods. In perhaps a typical situation, a teacher may turn attention only for a moment from the group and say quietly to a child assigned to study alone: "Why am I hearing you, Joe (or Mary)".

17. Record keeping. Each time a child completes a task plan successfully, this fact is recorded in one or more places -- in a folder kept by the pupil, or by the teacher or an aide, or on a chart on the wall, depending on the practice of private or public records. Some schools avoid wall-chart records to insure privacy and to avoid competition; others consider them as motivating devices. When the same event is to be recorded in several places, clerical help is needed or computerized record keeping. The burden of record keeping was the most frequently heard complaint from teachers.

18. Contact with parents. Sometimes the record of objectives accomplished is used for reporting of progress to parents. In other instances an overall summary is given, either in writing or in a meeting with the parents. Beyond this, parents need to be informed of the nature of the program so that they can interpret the reports received. They also need such information as a preparation for visits to the classroom. Otherwise they may not understand why the noise level is higher than in a conventional program, or they may misinterpret the pupil's freedom of movement as an unplanned rather

than a planned activity.

The Evaluation, Revision and Expansion Stage

19. Evaluation of retention. Beyond the tests given after study of each objective, other evaluations are needed to insure retention, transfer, and consolidation of skills. If the program does not provide such evaluations, they need to be designed by the teachers.

20. System evaluation. This form of evaluation should be done at frequent intervals as a basis for program improvement, and at less frequent intervals for program decision making. Often the developer has conducted the first type of evaluation (formative evaluation), but such evaluations also need to be made by the schools. The developer or a network of schools may conduct summative evaluations of the program, but each shcool should also be sure to know how well the program is succeeding locally. School district personnel often also conduct both forms of evaluation. Whether these should be based in part upon use of standardized tests depends on factors discussed in Chapter 1.

21. Communications. The public and the school board need to be informed of the nature of the program and of its results. Indiscriminate publication of the results of standardized tests by the media should be avoided; otherwise a good program may receive an unfair public image. The district office may need to request an opportunity to discuss the relationship of locally adopted objectives to skills or knowledge measured by standardized tests, which may or may not be closely related to local objectives. Such briefings could lead to more sound release of information to the public.

Schools often form networks to exchange information and ideas for program improvement and evaluation. Some developers assist in forming networks.

22. Diffusion. A school or school district may or may not be interested in encouraging other schools to adopt a program. But one value of announcing exemplary programs is to encourage visits by personnel from other schools. The next step of establishing a program as a demonstration program is an even more direct invitation to other schools to "come and see", and if interested, to observe and participate in the program with local teachers as a part of a training program.

Developers are also interested in diffusion of their programs; they may cooperate with other agencies, including publishers, in diffusion and training efforts. By a series of such diffusion efforts, several thousand schools have, to date, adopted individualized programs of instruction.

A Hypothetical Case Study

The following monologues are intended to represent a possible application, in one school, of the 22 components of individualized instruction discussed above. This hypothetical school represents a composite program as derived from visits to the 42 schools. No one school is represented, and no specific persons are reflected by the monologues. It simply appeared useful to attempt to employ more informal conversational language as a way of illustrating, in context, how the 22 system components may be viewed by school personnel.

The monologues are placed in quotation marks because they

represent utterances of the hypothetical persons, and thus are an abrupt change in style from the other portions of this report. Numbers in parentheses refer to the aspects of an individualized program as they were numbered in the opening portion of this chapter.

The hypothetical school is named Brookdale. It is an old building with self-contained classrooms, K-6. It offers individualized reading, language arts, mathematics, and science. Presently work is progressing on developing a system for individualizing parts of the social studies curriculum. The princpal explains how the staff went about individualizing.

The Principal Speaks

"Let me first make a few general comments about the change process in schools. It is important to look carefully and thoroughly at each element of a school and to analyze how a change in one component will affect the others. Children, their parents, teachers, district administrators, school goals, instructional programs, materials, and facilities must be seen in totality.

"Next, I want to emphasize that a program of individualization, no matter how carefully planned, is dependent in the last analysis on how well it is implemented and improved by school personnel. This leads to the next point -- a system of individualization is as much a process as a product, for even with the variety of materials available for developing a system locally or for even adopting one of the national programs, schools succeeding with individualized instruction are constantly evaluating, refining, and expanding their programs. As soon as one goal is attained, a higher one can be set.

"In our situation here at Brookdale School, the interest in

individualization (1) came as a result of a series of meetings that the superintendent organized. He invited all interested school personnel to attend. Several principals, teachers, and district-level personnel began to discuss what could be done to help our children learn more in school. We read what was available then; for someone starting now I would recommend many of the books written in the last few years. (See the Selected Bibliography at the end of this report.)

"As a result of our initial inquiries, we realized that if we were to significantly change any of our schools, we would have to develop a strategy that would involve the people who would ultimately be affected by the kind of changes that were envisioned (2). At the school level, we had a series of meetings involving a series of filmstrips, guest speakers, and lots of discussion. Teachers came to me for more details on how we might change our program. But our strategy for change was to be developed by all of us working together. As much as I wanted to cause change and impose my ideas of what I felt fairly certain would help, I learned that just as a salesman cannot sell a product for which a client has no need, so I could not sell my ideas on individualizing instruction until the teachers were ready. I came to realize that my ways alone would not have worked, for the program we have developed is truly a result of all of our efforts -- teachers, principals, and district personnel. We planned at the outset to spend an entire year planning and gathering the needed instructional materials, to spend the following summer doing what couldn't be done during the school year, and to attempt to individualize at first in only one curriculum area.

"The district brought in a person who assisted the schools in formulating plans. This person, the district facilitator, has been important to all of us by being in a position to see how all the details fit together, and from this perspective, to see the needs of the total system. An important part of our efforts has always been looking for ways to improve the system (6,20). The facilitator has assisted teachers in each school not only in accomplishing school objectives but in coordinating work among schools and reducing duplication of effort.

"I would stress that not all of the teachers agreed on the desirability of individualizing, once they realized the magnitude of the changes planned. Since we had given ourselves a full year of lead time, it was possible for several of these teachers to relocate in more conventional schools. Their positions were filled with teachers who were interested in our program.

"We agreed that as part of our strategy for change we should assess our needs (3). Instead of my telling the teachers how valuable a procedure this is, and how learning objectives and activities for accomplishing them could be tackled systematically, I invited a teacher from a neighboring school to explain the procedure as practiced in that school. (See Chapter 3, the description of the planning procedure in Talbert School, Fountain Valley, California).

"Using a systematic planning procedure was helpful in several ways. First, it forced us to look critically at our needs and to put them in rank order. Then we found that developing curriculum objectives was much easier and more relevant. Discussing alternative ways of attaining the objectives forced us to be realistic and to plan within the financial and other constraints that were imposed. We

decided that when the number of pupils increased, we would increase the number of aides rather than the number of teachers. A large part of our time was spent investigating how other districts with needs and budgets similar to ours were attempting to meet them.

"Our planning sessions had an unexpected benefit -- teachers had an opportunity to talk with one another and to share problems. We found that all of us became more open about our problems once we realized how many we had in common. The district facilitator helped us to devise our school plan, and once each school in the district had done this, representatives from each school met with the facilitator to find ways in which schools could cooperate and ways in which the district could help. We found that there were resources available in the district that we had previously been unaware of.

"Among the major needs we specified were reading objectives for children from kindergarten through grade six (4). We discovered that several lists of such objectives had been developed, and we analyzed these to see if they fit our needs. This survey was coordinated by the district. We found a series of objectives and tests which we adopted and planned to revise during the following summer. In general, we have tried to import as much as we could. Usually, if we look hard enough, we can find a system that we can expand upon. Seldom have other systems been exactly what we need, but we have been able to make adaptations without too much trouble. The key, of course, is stating our objectives clearly and having a way for measuring whether the materials chosen do, in fact, help children attain those objectives. From the beginning of our program, we have been working on our tests, which we find have to be referenced to specific learning objectives. Standardized, norm-

referenced tests are used, but comparison of our children to national norms has not been very useful for diagnostic purposes. For these purposes our locally produced criterion-referenced tests are most useful.

"Once we decided on the objectives and had some tests referenced to them, we undertook the process of keying isntructional materials to those objectives (5). Using a commercially available reading system as the basis, we added lots of materials to fill the gaps we found existed in the materials. So ours is a multitext approach. We also realized when analyzing our needs that some students would benefit from different approaches, and we keyed in alternative materials accordingly. We have found that we analyze instructional materials quite differently now since we use our learners' needs and the objectives we want them to attain as our criteria for selection.

"From experince we have learned that our keying process is a continual one, since new curriculum materials are available each year. It is important for the district to be constantly reviewing new materials. When something is found that should be keyed, this is done. When classroom teachers find some materials or develop something, it is then disseminated throughout the district.

"Since many of the materials keyed to the objectives are not intended for independent study and few materials are truly self-instructional, teachers develop task plans to accompany the objectives. Typically, a task plan includes one to three objectives, and it provides directions to the pupil in locating and using needed

material. Most task plans include a self-checking exercise. Sometimes there is a pretest and a posttest for each plan.

"Once the basic task plan is developed, it is often revised based on problems that children experience. You would be surprised how many task plans that we thought were really great when first developed turned out to need extensive revision once they were tried out with children (6). Children's performance is the best indicator of the quality of a plan. In the summer and during the year, the district contracts with teachers to key materials to objectives (5), to develop the appropriate task plans (14), and to revise previously written plans.

"We knew that a management system was necessary to keep track of each student's progress, so we adopted a checklist that has a summary statement of each objective and a place to indicate when an objective is introduced and mastered (8). To indicate progress in mastery of sub-skills, each child has a folder which contains a more detailed record of progress which is summarized weekly on the checklist for each class. These class checklists are not posted in classrooms but are used only by teachers and aides so that students are not encouraged to compare their progress with one another.

"In practice we found that while each teacher used the basic system and forms supplied by the district, in addition each teacher tended to keep records in his or her own way.

"Our record keeping system evolved gradually through efforts of the school and the district facilitator. My criteria for the management system is that I can look at the teacher's checklist and any child's folder and see immediately what the child has

completed, and what comes next.

"Once the objectives and materials had been determined, we began to consider various ways to organize the school to facilitate the smooth operation of the instructional program (7). Large quantities of instructional materials had to be stored but made easily accessible to teachers, aides, and children. Materials and equipment that do not have to be stored or operated in a central location should be stored where they are used -- in the classrooms.

"Scheduling of classes had to be worked out to minimize the amount of time children would spend moving to and from the materials center where most of the hardware (such as filmstrip projectors and tape recorders) are used. Also, the schedules had to be arranged so that aides in reading could be shared by different teachers. We have a combination of independent and small group instruction. Teams of two or three teachers diagnose reading needs of all the students they have and form groups of 4 to 10 pupils on an ad hoc basis. Because of the numbers of students involved, there are more grouping possibilities. This is especially important in forming groups for reading comprehension. We have found that grouping students who have similar needs is an effective and efficient way to meet students' individual needs, which may in fact require group interaction. For parts of the curriculum, we use essentially self-contained classes so that scheduling for team teaching in reading doesn't restrict flexibility in scheduling other subjects."

The principal suggested that the teacher preparation is extremely important. Here is a statement from one of the teachers on that component (9).

A Teacher Speaks

"The best preparation was being involved in the planning of the program. Even though I did not participate in the original planning, I have been involved in plans for revision and expansion. For example, this year I am helping to write our social studies objectives and to locate materials, and next summer I will be writing tests and task plans. Another important way I learned the operation of the program was by being assigned an aide who knew many of the details.

"We have had to learn several new skills, such as how to diagnose a child's problems so that the instruction I give or the material I assign meets the child's needs and doesn't just pass time (12). Now I spend much more of my time working with children, diagnosing their needs, often on a daily basis, and providing instruction at that time. At first, I moved around a lot feeling I had to see everyone all the time. But we arranged that the aide would answer certain procedural questions; aides also helped children who finished one task to go on to another without checking with me first. This meant that I could spend more time with each individual. Acquiring a detailed knowledge of all the instructional materials took us all some time. The district faciltitator duplicated copies of all the various teacher's manuals so that each teacher could have a copy. In general all the teachers have become more concerned with children's learning than with teaching without knowing what each child is learning.

"Some teachers have taken on added responsibilities and help to coordinate the various curriculum areas, doing for the individual

school what the district facilitator does for the district. And, of course, the principal is an instructional leader. It is not at all unusual for the principal to diagnose needs and work out a study plan for individual children. So there have been new roles for everyone in the school (10).

"Teachers in our school have had to learn how to interview teachers and aides who are hired to work with us; it is one of the tasks that the principal lets each team of teachers do. It makes sense that we should determine who we will work with, for we know our needs best. For example, since none of us on our team types very well, we were anxious to hire an aide who could type. And of course, we have learned how to use aides well; it took a while for me to realize that a great amount of work I thought only I could do could actually be handled by an aide. We have specific descriptions of duties, both clerical and instructional, so there is no confusion.

"It is important to orient children to various parts of the program gruadually (11). For example, some of the audio-visual machines are more difficult to master than others. And, of course, children may vary with respect to how quickly they learn to use the equipment properly and responsibly and to return it when finished. We now have an organized individualized system for teaching the children how to use the equipment. We have much more variety in materials now, but in most cases fewer copies of any one set, since fewer children need to use any one set at the same time. The children help by locating and returning materials to their proper places.

"Our teacher planning time is one of the most important features of our system (13). Three of us who work together regularly have

arranged our schedules so that two days a week there is an hour when all three of us are free at the same time. Other teachers arranged art and music instruction to fit this schedule. We use that time to regroup children in each of our classes and to plan units of work where each of us will be responsible for planning, designing learning activities, and evaluating learning in one area for all the children in our three classes. This approach is common in social studies.

"When planning together we discuss an individual child's progress, using the test results and our own observations of the child. Each child has the benefit of three teachers' suggestions for helping him. Of course, for reporting to parents and for providing a home base for each child, especially the younger ones, each child is assigned to one of us as 'his or her teacher'.

"In brief, our program works probably because of our interest in making it work and because of the extra time all of us spend in planning and organizing. You should talk with children about many of the operational details of our system."

Fred, a fifth grader at Brookdale describes the way his subjects are taught and how the program operates on a daily basis (12, 13, 14, 15, 17).

A Child Speaks

"I really like it when Miss Mason gives me one of those pretests and uses the results to help me learn. I used to hate tests. Now they are fun. The teachers in this school spend more time with me individually or with a few of us together than the teachers in the school I came from, where they just talked to all of the class most

of the time. I feel we kids used to always be grouped to make things easier for the teachers; now I think we are grouped to help us learn. I just learned a new word that I think describes the class now -- humane.

"Here is my program of studies, which my parents, Miss Mason, and I worked out last year (13). We have made some changes, though. Like I needed more work in subtraction before I went to division so we added some objectives this year. It's great being able to choose some of my own objectives -- like this one I'm working on now -- for learning about hamsters. Do you know that a mother hamster takes only sixteen days to have a litter of babies?

"This is my planning sheet. I write in a lot of the scores for the exercises myself. I use the answer keys on the desk over there to correct my work. This sure beats having to wait for the teacher to correct everything. I can often decide by myself what I need to work on. Here is my folder for reading and my task plans for the objectives I'm working on now. Lots of the kids in here do many of the same tasks, but, of course, we all work at different rates. Some of the task plans are chosen by each of us according to our own interests. This one on telescopes I chose myself.

"Another thing I like about this way of learning is that everything I have to do and use is clearly written here on the task plan, and I can go get the books, filmstrips, and tapes myself. And I know what I am supposed to be learning because each task plan has an objective. The record-keeping forms and the task plans are set up the same way for each subject so I don't have to learn different ways of doing things in each subject.

"We usually work on reading, spelling, and grammar in the

morning. If I finish a task plan and am ready to take a test on it, I write my name on the board and Miss Mason or our aide, Mr. Wallace, gives me the test. Sometimes if I have to wait before taking a test or to have a question answered, I will work on one of my own objectives which are kept in this folder. Or Miss Jones lets us work on our mathematics task plans. Most of us also feel free to ask friends our questions. We have learned that questions about where things are and about how to follow the plans can usually be answered by other kids. For some things we go to the aide -- like when we need to watch a television tape or a 16 mm film. The 8 mm films we can handle ourselves.

"I like this school and the way we learn. It's fun."

Back in the school office, the principal talked about evaluation, revision, and the expansion of the individualized program at Brookdale School (19,20).

The Principal Speaks Again

"As I mentioned earlier in the day, there are different kinds of evaluation that we are interested in: evaluation of student learning is one, and evaluation of our entire system of instruction is another. I told you that we have found that norm-referenced tests are not, we feel, valid measures of our objectives, and instead we use a series of tests developed within the district to evaluate our students' achievement. These tests are made and keyed to our specific objectives.

"The other kind of evaluation, that concerned with the entire system, is very important, for we must know which areas need to be improved. There are several ways we evaluate the system. One is a

detailed questionnaire sent to the parents; another is a suggestion box where teachers and students can submit their ideas. Of course, I meet with the teachers regularly and get lots of feedback this way, especially when we meet individually.

"Communication is an essential part of our program, not only within the school but also among the school, the parents, and the community (21). We had special back-to-school programs for parents when we first began, and every year we provide special orientation programs for parents new to the community. We also encourage parents to visit the school, and we have found that the many parent volunteers we have working in the school are a good liason between the school and the community.

"Schools need to communicate among themselves too. The district facilitator arranges workshops for teachers periodically, and I will often take a teacher's place for a whole day in order to allow that teacher to visit a school in another city. Of course, I like the opportunity to be in the classroom. An instructional leader cannot lead as effectively by staying away from the classroom. Several schools which are individualizing in cities in this part of the state have an organization sponsored by one of the teacher training colleges. The newsletter of this organization disseminates ideas to all the teachers in the participating schools. Ultimately, we hope that school in this organization will be able to share such things as task plans and objectives.

"In conclusion, let me say that we have a great desire to improve the quality of instruction for our children here, and that individualizing has helped. As you have learned from your visit, changes have occured gradually and only after careful and thorough planning."

So concludes a hypothetical case study of one school's experience with individualized instruction. Almost all of the examples presented in the study were actually observed in at least one of the sites visited during the research for this report, and they were included in Brookdale's experience because, in the writers' judgment, they are exemplary and workable practices.

Chapter 5:

Selected Issues, Problems and Alternative Practices

The Risks of Going it Alone

One school visited typified the difficulties encountered when only one school in a district attempts to individualize instruction.

For two years, under the leadership of the principal, the teachers in this school attempted to develop their own objectives in one subject, and to work toward a locally-developed system of implementation. They then became discouraged with the magnitude of the task, and noting that available materials fitted their objectives, they simply adopted them. Two of the teachers were trained by the materials supplier; the two teachers, in turn, trained other teachers in the school. Eventually, four subjects were individualized.

After several years the school had obtained neither special support from the district nor external (Federal or State) funds.

There were also other complicating factors:

1. An accreditation problem was encountered due to employment of accrediting criteria which conflicted with some of the school's procedures for individualizing.

2. A changing pupil population introduced pupils who were not ready for the materials that were appropriate for the earlier population.

3. Opposition came from other schools, resulting presumably in disruption of personal realtionships and alienation of personnel in the school.

While this school had encountered some problems in sharing and safeguarding materials and other management problems, these would not have been insurmountable is funds and moral support had been available.

Due to the above problems, only one individualized subject is now

functioning fully. Individualized materials in the other three subject areas are being used only while the supply lasts. Teachers remain convinced of the value of individualizing, but they and the principal are understandably unhappy about the total experience.

Alternatives to Going it Alone

The school experience related above involved great effort by the principal and teachers. No lack of dedication accounts for the discontinuance of that program. The personnel of the school are now keenly aware of the need to seek other ways to support such an undertaking. Some of these alternatives are discussed below.

In the Duval County program, described in Chapter 3, the district office provided the leadership both in obtaining supplementary funds (local, State, and Federal) and in program development. Being a large district, it also appointed a full time project director for the individualized program and a master teacher for each of the participating schools. The district also maintains a training program, using both broadcast and tape television, and provides a wide range of technical assistance. This district began with reading and then went on to mathematics.

In the schools of Dougherty County, Georgia (Chapter 3), the person who became the Title I Project Director took the initiative in district-level functions similar to those described above for Duval County, Florida. Being a smaller district, one Title I supervisor assists the Project Director in coordination and support of the schools. It may be recalled that this supplementary (compensatory) reading skills program has been declared an exemplary Title I program by USOE.

In the Walter T. Moore Elementary School in Tallahassee, Florida, the school obtained Title III funds to develop an innovative language arts program. This program has been validated by USOE as an exemplary Title III program, and the school is now a National Demonstration/ Diffusion Center.

In the schools of St. Bernard Parish (County), Louisiana, a variation of individualization based on team teaching within subject specialities has managed to survive without federal funding. As seen in Chapter 3, this began as a loosely structured program using a rather rudimentary curriculum guide. Teachers were allowed freedom in implementing the program. While this district began its program in all elementary schools in all subject areas (a novelty in itself), perhaps the absence of fine-grained objectives or rigid sequencing of objectives, and the use of evaluation by teachers rather than evaluation by use of tests permitted a gradual implementation that did not make the teachers feel overburdened.

Thus, while one school failed in its effort to individualize in several subject areas without supplementary funds, one district was able to put a new program into operation without supplementary funds. Since personnel in both cases were hardworking and dedicated, one might suppose that the two contrasting experiences might be accounted for by a difference in the nature of the two programs and in the number of new details to be learned and managed at once by teachers.

Taking these four successful experiences together, it seems reasonable to conclude that:

1. District office psychological support is always helpful.
2. A single school can take the initiative, but like the one that

tried unsuccessfully to operate independently the type of program desired may require additional funding.

3. While most school personnel interviewed advocated starting a program in only one subject area and in only a few schools, with gradual expansion later, one district implemented a program in all schools and all subject areas without supplementary funds. It must be presumed that the type of program in part determines the need for supplementary funds and the need for gradual implementation.

4. The district (St. Bernard Parish) that implemented a program in several subjects in many schools without supplementary funds began with a loosely structured program and other details were developed gradually.

5. Supplementary funds are most needed when aides and other personnel must be added, and when larger quantities of materials are needed, and when the plan requires careful monitoring of pupil progress through a detailed testing and reporting system. Some backlash effects have been observed when school policy leads to decreased or constant budgets in some schools and increased budgets in others, within the same district. (Local justification of such a situation is often based on the fact that schools with the most heterogeneous populations need the greatest variety of materials and teaching methods.)

The Frequency of Making Prescriptions

Almost all schools visited used some system for initial placement of the child. This does not refer to assignment to classrooms or to sectioning. In reading and mathematics, particularly, a set of diagnostic and placement tests is used to determine the place of each pupil in the overall scope and sequence of the curriculum. The result

of such testing reveals the grade level to which the child has progressed. More importantly, it places the child's position in a series of objectives ranged either rigidly or more flexibly in a series.

The matter of how rigidly or how flexibly a linear series of printed objectives is interpreted often is the key to how the system operates. If a teacher perceives that a series of objectives appearing on a permanent record card and numbered say, from, 1 to 250, means that some authority has intended for this to be a fixed sequence, then several things result. First each child in a group will be assigned to work on a different objective: if there are 19 children, 19 different objectives will be assigned, and 19 appropriate materials and activities prescribed. If, in addition, these objectives are minute ones, like discriminating a "p" from a "q", then the teacher is faced with a heavy burden. Each pupil will master several such minute objectives in 45 minutes, making necessary several prescriptions for each pupil. In such a case, even when an aide tests each pupil or otherwise evaluates mastery, the teacher can do little more each hour than write prescriptions. Teachers were observed literally not moving from their desks for an entire period under such a procedure. Furthermore, all the study is solitary study, for there is no basis (or teacher time) for forming groups for direct instruction and group activities.

When, on the other hand, the teacher is aware that what appears as a fixed linear sequence of objectives may safely be departed from, if done judiciously, the teacher forms ad hoc groups composed of pupils who next need similar objectives or objectives near to each other in the printed sequence. The teacher, under these conditions, may have time to

introduce to small groups the overall purpose of a cluster of objectives, and the pupils can carry on from there. (The reader aware of the nature of intellectual skill hierarchies for objectives will recognize that subordinate compentencies on the same level of a hierarchy permit options in sequence, while objectives at a lower level are prerequisite to learning of the objectives at the next higher level. Many teachers grasp the principle involved even without knowledge of formally designed skill hierarchies, which apply only to objectives that represent intellectual skills.)

Thus, small group activities are likely to be prominent in an individualized instruction system only if the objectives are larger than the minute objectives mentioned above, or if the teacher perceives when the sequence may and may not be altered. In either of these latter cases, one is likely to see individual study, paired study, and small group study all going on at once in a classroom. In addition, one may see individual tutoring, peer tutoring, or tutoring by an older pupil or an aide.

The size of the objectives and the teacher's perception of sequencing options together determine how many prescriptions must be made by the teacher.

As one teacher put it, "A child doesn't have to know the entire alphabet to begin work on word recognition."

Some schools which report excessive difficulty in keeping up with needed prescriptions and maintaining records of pupil progress may have trapped themselves into taking too literally sequence requirements among fine-grained objectives.

The leader of an individualized program needs to ponder these matters in order not to have teachers spend excessive time on prescriptions and

record keeping and in order that solitary study is not the only resulting mode of operation.

Duplicate Record Keeping

The above dual problem of minute objectives and too rigid an interpretation of sequencing can work to exacerbate another problem -- record keeping.

Each time a pupil completes an objective, this fact must be recorded somewhere. But in some schools, each time a pupil masters an objective through successful completion of a prescription, this accomplishment is recorded four times: (1) on the pupil's own record of progress for his information and guidance; (2) on a wall chart, which shows the progress of each pupil in a series of objectives; (3) on the pupil's permanent record card, K-8; and (4) on the teacher's planning book, often used for planning each day or week of work for each pupil.

Such duplication may be the source of teacher complaints about too much record keeping, and hence, the need for more aides or for computerized record keeping. If this problem is solved, the system runs more smoothly, allowing more teacher time for other activities, such as tutoring, conferences, and program planning. Since these complaints are not made in some schools, more than one solution seems to have been found: larger objectives, flexible sequencing, simplified record keeping, or automation of record keeping.

In Project PLAN* the above problems were foreseen at the outset, and the computer was used not only for record keeping but also for scoring tests and as an aid to the teacher in selecting objectives and appropriate media, materials, and activities to match pupil learning style. When

alternative sub-objectives within an objective were also tried, the system was overtaxed or the teacher could not handle the more complex decision making, and changes were made.

In summary, the above interacting problems can be and have been solved by different schools, some with a computer, and some (presumably more) without a computer. Nothing said here, however, is intended to discourage the further exploration of useful assisting roles for a computer.

Self-Directed but Highly Structured?

An apparent paradox in the literature on individualized instruction is represented in the twin statements that "Individualized instruction leads to an independent, self-managed learner" even though "highly structured materials, such as programmed instruction, or audio-tape directions with workbooks, are employed." This paradox disappears if the procedures are analyzed into their separate components, as follows.

A pupil's responsibility for learning can be enhanced in these respects:

1. The pupil can have a part in decisions concerning which objectives are to be undertaken.

2. The pupil can have a choice of types of materials, media, and activities for each objective.

3. The pupil can learn to locate the appropriate materials, after being taught the storage and coding systems.

4. The pupil can be responsible for operating simple equipment properly and returning materials to their proper place.

5. The pupil often can select the type and number of activities needed for mastery, and conduct self-evaluation before taking the final mastery test over an objective.

6. The pupil often can enter test results into records and record progress made.

7. The pupil can determine when to meet only the required portion of objectives and when to branch out to enrichment exercises rather than taking another core objective next.

These and other self-directing and independent actions do take place in individualized systems, and presumably they are desirable. These responsibilities of pupils can be achieved gradually, with as much help from others as is necessary, so that the pupil becomes increasingly self-sufficient. Such independent actions presumably help develop self-esteem, as does success in the study undertaken.

The above benefits appear in no way diminished by the fact that the materials used are largely "self-instructional" in two respects: (1) the directions for how to proceed are in the materials themselves, as in a programmed instruction unit which tells the pupil how to use the slider to cover up the feedback until the pupil's response to a frame has been written, or as in an audiotape that tells the student how to use the coordinated workbook; and (2) the materials are carefully designed to insure mastery, by careful design of vocabulary, prompting, sequencing, and alternation of teaching frames with testing frames. Such predesigned, self-instructional materials, accomplish more teaching for each individual than can be expected when a teacher conducts a lesson for a highly heterogeneous class, in which some of the pupils do not have the prerequisites for mastery of that lesson. Thus teacher time can be used for planning the program, helping those experiencing difficulty, and challenging the fast learner with advanced or enriched experiences.

In summary, highly structured materials seem appropriate, especially for young learners. They increase independence and freedom and decrease dependence upon the teacher. Such materials contain more of the needed instructional events than are contained in conventional textbooks and supply those events to each pupil at a more appropriate time than a teacher can supply them to a large group taught together. Such carefully designed materials seem far better than a recommendation frequently read in the literature -- to tear the textbook apart and put each page in a folder.

The Importance of Community Support

One district visited had used a national system but was forced to discontinue it, largely due to opposition from a small but vocal group of parents. The district now feels that a better public information effort might have been made. While there were some interal problems, those might have been solved were it not for parental opposition.

Some parents did not like the new reporting system based on accomplishment of objectives; they preferred the old way of reporting. (Some districts combine the old and new types of reporting to parents, including conferences with parents.)

Other parents were concerned about the freedom of movement pupils had among areas in the school building, and still others objected to the increased noise level. The majority of parents were not aware of the type of program either before or during the individualized program. When asked if this unfortunate experience had any desirable residue, the administrators felt that the brief use of individualization served as a catalyst for change for the teachers.

The principle is that parents and the community should be informed better and earlier, and careful efforts made to explain more fully the purposes of those aspects of the program most objected to or least understood.

In contrast to the above experience, the principal of the St. Gregory Parish School in Philadelphia reported 100 per cent attendance by parents at Sunday afternoon demonstration seesions in which the individualized (IPI) program was operated during shortened periods in reading instruction. Presumably these parents attend such a session once per year, at which time questions can be answered and any changes from the previous year explained. This principal also informs parents of proposed changes, and regular faculty meetings are convened for continous training purposes. This is a small parish school, so the program may have benefited from a rather homogneous neighborhood constituency in which parents were sufficiently interested to pay tuition when they were able. This is, however, a low-income constituency. Tuition pays only for faculty support; the parish pays for building upkeep; and Federal funds are obtained for special instructional materials.

Team Teaching and Rigid Schedules

In many schools which used team teaching to individualize instruction, the most rigid schedules were observed. This was not due to the overall school schedule or to the principal but to how the teams operated. Especially when each team was composed of teachers concentrating on a single subject area, pupils' work, however well managed during a period, had to be terminated on schedule so that the pupils could go to the next subject managed by another team in a different part of the building. This

team specialization makes for efficient use of materials, but often at the price of rigid scheduling.

On the positive side, however, all teachers on the team can cooperate in planning for each pupil's needs, and the pupil can work with the teacher best suited to his or her needs. In one team planning session observed, each teacher on the team could make specific diagnostic and planning comments for each of the 125 pupils the total team was handling. Thus team diagnosis and prescription may be one of the greatest benefits of team teaching. It is then a matter of judgment as to whether these benefits outweigh the rigid schedules which often impede the momentum of pupil progress.

Matching the Learning Environment to the Pupil

Not all pupils work well in the same environment. The above discussion of team teaching suggests that a pupil tends to work better with one teacher than with another. A further corrolary is that one pupil works well in a self-contained classroom while another benefits from a large pod with several teachers and many pupils.

Just as reasearch has not yet revealed general principles on the basis of which pupils could be grouped in order to match learning style to type of instructional materials, so research has not yet revealed principles predicting which pupils need the security of the self-contained classroom and which pupils can benefit from the larger groups associated with team teaching. It is therefore up to the teachers to help make this determination for each pupil rather than for small groups of pupils having similar observed characteristics. In short, no basis exists for classifying pupils to select media, type of learning experience or type of classroom.

The alternative, then, is to utilize teachers' knowledge of each individual pupil. This means that for a transfer pupil, it takes time for teachers to make enough observations to assign the pupil to his or her best learning environment. For non-transfer pupils, of course, teachers share information from previous years so that suitable decisions may be made at the opening of a new school year.

The issue of learning environment just discussed is not directly related to pupil "grade norms." One child several years behind grade norms may need a self-contained classroom; another child at the same achievement level may benefit from the team teaching arrangement.

The Russell H. Conwell Middle Magnet School in Philadelphia, Pennsylvania (See Chapter 3) maintains two ungraded, self-contained classrooms for children needing the security of a small group and interaction with only one teacher. The majority of pupils work in an open space, team teaching arrangement. A child can change from one environment to the other when there are indications of readiness for change.

Within one team teaching school, pupils are classified so that teachers can provide the appropriate degree of freedom of movement of the pupil within areas of the school. Pupils are designated as either "independent," "limited," or "restricted." Badges are worn by the "imdependents," to help manage movement and to encourage and reward independence.

The Issue of Competition Among Pupils

In one school district visited, almost every classroom displayed a wall chart listing the names of the pupils and the objectives each had mastered to date, with space remaining for listing objectives yet

to be accomplished.

Other schools avoid using such public records of individual pupil progress in order to discourage competition among pupils. Rather, each pupil is encouraged to compete with his or her own past record.

Still other schools attempt to disguise the levels of different groups by such group labels as "red birds," "blue birds," etc. Most teachers in such schools admit that children see through such disguises, and they feel pupils are aware of their own progress relative to that of otner pupils no matter what teachers do.

In short, competition seems to be encouraged in some schools, discouraged in others, and disguised insofar as possible in still others.

In spite of the above variations in school practices, teachers in most individualized programs in their dealings with pupils do appear to assign only those objectives for which the pupil is ready. In this respect, almost all teachers observed in the various programs appear to show a deeper understanding of the extent of individual differences and therefore more humane expectations of pupils.

In fact, one ot the most striking overall impressions gained from school visits was the genuine concern for pupils displayed by all school staff members, including aides, teachers, principals, and the school custodian. Overt acts of kindness, concern, and helpfulness were observed everywhere in these schools -- in the halls, in the principal's office, and in the classrooms. No child who was crying or showing other signs of distress was observed to be without the attention of an adult for long. Teachers and others were seen to stop in the halls to find out why a child was sitting in a corner or not attending to his assigned activity. It did not matter that a pupil did not belong to that teacher's class;

the concern was for all pupils. Teachers were heard conferring on what was best to do, and they informed other teachers so that the source of the problem would be understood by others. Sometimes it was a family upheaval the night before; sometimes a conflict with a teacher or another pupil; sometimes sheer discouragement over a learning difficulty -- in any case, it received attention.

While it would take a special study of the behavior of teachers in conventional programs as compared to individualized programs to determine whether or not there is a difference in overall concern for each child, a reasonable hypothesis might be that experience in individual diagnosis of learning needs results in a fuller awareness of a pupil's total needs on the part of the teacher in an individualized program.

Conflicting Views Concerning Supplementary Funds

As noted in Chapter 3, most programs visited had obtained some supplementary funds which were used for various purposes: hiring central staff, master teachers, coordinators and aides; training of personnel; purchasing additional materials; and keying of materials and tests to the objectives. In the case of smoothly operating programs, the personnel interviewed usually said they could not have the individualized programs without special funds. In programs where problems were reported (insufficient materials or too few aides), additonal funds was often cited as a means for remedying the problems. In Chapter 2, the amount of special funds needed was estimated for the operation of the national programs in the schools.

Yet, in Chapter 3, at least three programs were described which operated without supplementary funds (St. Bernard Parish and the two schools in Philadelphia).

How can these differing experiences and reports from personnel visited be harmonized? Two possible explanations present themselves: (1) there are differences among types of programs and (2) there are differences in management approaches. These two will next be discussed separately.

Program Differences

The small and more rigidly sequenced the objectives the greater the number of separate learning activities that must be prescribed and managed in a given hour in the classroom. This would require access to a wider range of materials at a given time and would increase the number of prescriptions to be made and monitored. Thus the need might arise for more materials, more aides, and more record keeping. Some of these variations were discussed earlier in the chapter. It is under these conditions that teachers appeared to be (and reported being) almost frantic in their efforts to keep things moving. If, in addition, there are several alternate materials and learning activities for each objective, the number of possible prescriptions for each child increases, thus requiring more decision time in making prescriptions and still more separate activities and materials to be managed.

When the converse of the above conditions exists, there is more opportunity for ad hoc grouping, thus reducing the number of simultaneous activities to be planned and monitored. This converse set of conditions may tend to be associated with team teaching, thus bringing a sharing and specialization of functions for teachers, although a greater number of pupils are in a group, which may explain why St. Bernard Parish (Chapter 3) could operate its program without special funding.

Management Differences

Different districts introduce individualization in different ways. Some begin with only one subject area and only one school. Others begin with a few schools and expand gradually. This makes teacher preparation a more gradual process which can take place within the district rather than requiring travel to workshops conducted elsewhere. These conditions could hold down costs, especially in the kind of program having the nature just described.

Introducing individualization in one subject area at a time lightens the burden of learning to manage a new system and reduces extra record keeping. These conditions would seem to help most in the most highly prescribed and highly structured program. Yet St. Bernard Parish, using a team teaching strategy, was able to start the individualized program in several subjects in all schools. This may have been possible by a kind of gradualism -- beginning with less structure and working toward more structure. In any event, that approach was used without increasing costs. The superintendent feels that beginning with a single pilot school indicates a lack of total commitment which may retard implementation or create an atmosphere of either favoritism or envy.

In general, then, it appears possible that the type of program adopted or developed determines the feasibility of making a district-wide start without additional funds. Then flexible management, such as deciding the ratio of teachers to aides, can contribute to effective budget control, as well as a plan for making full use of any special materials or computer services planned. These later factors are related also to a plan for grouping, scheduling, and space utilization.

Generalizing from Experience with Individualization

At least three distinct kinds of changes occur in schools as a consequence of a first experience with an individualized program: program changes, subject area changes, and changes in teacher attitudes toward pupils.

Program Changes

Two schools in the 7-school district in San Carlos, California, were among the 14 schools in which PLAN* was field tested in 1967-70. After the field test, the district decided to develop its own modified version of PLAN*. The changes included new objectives and a substitute for computerized record keeping.

The reading objectives were modified from those used by another district in the state; the mathematics objectives were gathered from several sources. For both areas, the district developed its own tests and instructional guides. These new development activities cost more than was estimated, so the district has not been able to expand the system to all subject areas, as planned.

It appears, then, that experience with any individualized program can lead a school to re-examine its goals and procedures, and to gradually modify the program to fit newly-defined goals.

Subject Area Changes

In many schools visited, after teachers first gained experience with an individualized reading or mathematics program, they then (as individual teachers) gradually introduced aspects of individualization into their other subjects. It is possible that this gradual, voluntary approach, being free of pressure, may result in highly creative innovations which could

then be considered for adoption by other teachers.

Changes in Teachers

As previously mentioned, it is possible that experience with individualized teaching methods sensitizes the participating teachers to a greater concern for the total welfare of individual pupils. This concern may even carry over to personnel in the school who have not been participants in the individualized instructional program. Research is needed to study the total change in behavior of both teachers and pupils as a result of participation in an individualized instruction program.

Chapter 6:

Reflections, Recommendations, and Conclusions

Reflections

Various schools and school districts have employed organized systems of individualized instruction by taking three different approaches: (1) adoption of a national system, (2) development of a local system, and (3) a combination of the two.

The three national systems have been adopted by several hundred schools involving thousands of pupils. Experience of these schools with the national systems, either as a part of field tests or as outright adoptions, has provided the impetus leading many schools to a more searching and continuous review of their needs, goals, and programs. Regardless of the specific strengths or weakness of each of the three national programs, their existence is judged to be worthwhile due to their influences upon the schools. Even when a school finds reasons to modify one of these programs to adjust to local needs, or even to abandon the program in favor of developing a new one, the impact has been useful.

It is of distinctive credit to teachers trained in conventional methods that they have reserved judgment about an alternative method until they tried the alternative. After a sufficient trial period, usually of about two years, these teachers have a good basis for favoring or not favoring individualized instruction.

As more teacher training institutions offer more preparation for employing individualized methods, the easier it should become for teachers to adopt the new roles and procedures required by these programs.

Most of the national and locally developed individualized programs observed in the visits to 42 schools appear to represent an innovation

in methods more than an innovation in the objectives of the curriculum. However a greater variety of materials was thus introduced -- programed instruction, sound recordings integrated with workbooks, games, materials for small groups activities, etc. This in itself increases the probability that some materials can be found that are suitable for each pupil. The major effect of these programs is to start instruction at the point in the curriculum for which the child is ready, and to select materials and activities appropriate for each child; many of these activities are self-paced by the pupil, but some are group paced. Then by careful monitoring of progress, failures are detected and corrected before they become prolonged; thus long periods of failure are avoided, and both achievement and pupil morale are sustained at acceptable levels. A variety of tools and techniques make it possible for each child to be given appropriate objectives, whether these objectives are found in the overall sequence to be above or below the norm for the age or grade level. Therefore pupils need not be "sectioned" by ability or achievement level; a teacher can successfully guide the progress for a heterogeneous group.

Now that the experience of hundreds of schools attests to the present feasibility of individualized instruction as a means for enhancing pupil progress, it is reasonable to list improvements that are needed.

Continuous Needs Analysis

Most of the programs observed represent effective mechanisms for achieving conventional curriculum objectives. It would be timely now to ask whether conventional objectives are adequate. Much of schooling follows the traditional content of the various subject areas. Do conventional objectives in the separate subject areas represent the best that can be

done? Is sufficient attention paid to the study of projections of the nature of the future of society and its implications for curriculum change? Do the people most concerned have an influence upon the objectives that are selected? Are pupils given enough latitude in selection of their objectives, or is a standard curriculum provided for all, with only the learning procedure being individualized? Are school personnel so taxed with the management details of the new method that nobody has time for continous review of needs and goals? The next generation of individualized programs needs to attend carefully to these questions, and others that might be raised.

The Theory Base of Programs

Only some of the programs reviewed in this report appeared to have had a clear theory base; e.g., IPI is based on behaviorism and the theories related to programmed instruction, while PLAN* and IGE have no such identifyable theory base, at least with respect to the curriculum aspect of the program. Whether this is good or bad is debatable, but evaluators such as those who prepared the EPIE report (1974) seem to be able to respond better when there is a theory base.

It may not be entirely necessary that teachers be aware of the theory base of the program, since they are pragmatic in their search of some materials and activities that will be successful for the individual pupil. While originators of new programs are often interested in the merits of behaviorism vs. humanism, the teacher is more interested in finding something suitable for each child. For those interested in theory of instruction, unlike the case of the TV westerns, "the drama of the educational showdown increases as the distance between the two protagonists

increases" (Fox and De Vault, 1974, page 7). But more important, Fox and De Vault go on to show that the most practical educational programs rate high on criteria emphasized by both technocrats and the humanists.

It is possible that the next generation of programs could employ the best that is offered by opposing theoretical camps.

Conclusions

1. When a "national program" is "adopted" by a district, one typically sees great variations among schools and among teachers within a school in just how the system is operated. This applies to differences in: grouping pupils; materials used; sequencing of objectives; monitoring progress; making task plans; and record keeping.

2. Except for the use of computer, actual procedures in how PLAN*, IPI and IGE are applied differ among teachers and schools almost as much within one of these systems as among the three systems.

3. The above kinds of differences among teachers and among schools in a district also are observed for locally developed systems and for blends of national and locally developed systems.

4. Some schools have managed to develop and implement individualized instruction without supplementary funds, but more typically supplementary funds have been obtained. Such funds are typically used to hire additional personnel, to purchase additional materials, and to accomplish monitoring and recording of pupil progress.

5. Many schools and districts implement individualization gradually. Time is taken to orient teachers and to make preparations before implementation.

Also, often only one subject is individualized at first in only a few schools. Then the program is gradually expanded in grade levels covered, subject areas, and number of schools and teachers participating. Only a few districts implement initially in many subject areas and many schools; these tend to be the less highly structured programs.

6. Some schools have successfully operated their own individualized programs, but more typically the district takes the initiative.

7. At any one time there is a wide range in amount of implementation. There may be only one individualized classroom for one subject in some schools; in others, four subject areas may be individualized for all pupils in all grade levels in the school.

8. There is great variation among programs in the relative amounts of time a pupil spends in: solitary study; working with one other person; small group activities; or independent learning but in small groups controlled and paced by recordings heard simultaneously by all members of the group.

9. There are great variations in use of self contained classrooms vs. pods composed of many pupils and several teachers who work as a team; teams may be specialized or diversified as to subject matter and functions performed by each teacher.

10. Some schools use learning centers independent from classrooms. In the classroom, teachers diagnose and prescribe tasks; then the pupil goes to the learning center to work on the task. Some tasks, however, may be performed in the classroom.

11. Schools differ in space utilization; one school may store most specialized material in a central area; other schools have less sharing of materials among classrooms.

12. The greatest number of individualized programs in elementary schools is in reading and matehmatics; fewer programs include science and social studies, still fewer involve other subjects.

13. Individualized methods appear to be appropriate both for highly structured and carefully sequenced skill areas, and for more open structured subjects in which each pupil may elect his objectives, sequences, materials and activities.

14. The majority of schools visited took special care and used special (Title I) funds to meet the needs of disadvantaged or educationally retarded pupils, with good (and often surprising) results. However nothing in the evaluation data available to the authors suggest that these methods are any less effective for average and fast-learning pupils.

15. The authors estimate the 90 to 100 per cent of students in the individualized classrooms visited were "on task" during the observation period. Attention to study was superior to that observed in conventional classrooms in the same schools, and discipline problems were markedly lower also. Children also appear to enjoy their studies more under individualization, possibly because they are always assigned taks which they are capable of learning at that particular time.

16. Individual diagnosis and task prescriptions must account to a great degree for the success of individualized programs. Beyond that, however, efforts to choose the most suitable materials, activities, and groupings of pupils must also be helpful. The greater range of media and materials, including especially self-instructional materials, must contribute both to the manageability and to the success of individualized programs.

17. Striking evident in individualized programs is the focus upon the child and his learning, rather than focusing on the teachers and their "presentations". In some schools, learning of reading skills is highly individualized, while large class sessions are used for oral expression by pupils.

18. Individualized instruction is often used effectively in combination with other techniques, such as team teaching and differentiated staffing.

19. Individualized instruction can now be regarded as a highly feasible means for adjusting to heterogeneous school populations while providing quality education for each pupil.

20. Tests which are designed to measure performance on specific objectives are more useful for individual diagnosis and prescription than are standardized, norm-referenced tests, although the latter are useful for program evaluation, provided that the standardized test was designed on basis of objectives similar to those of the local school.

21. While costs of individualized programs seem to vary among types of programs and management methods, at least one such program resulted in mastery of more objectives by the pupils per dollar cost than for a

conventional program in the same schools. In that district, if one simply counts the cost of keeping pupils in school for X days per year, the conventional program is cheaper. If one counts pupil achievement, the individualized program is cheaper. These results are for an individualized compensatory program and conventional language arts program in the same schools. The results might not generalize to other contexts, but some individualized programs have been validated as exemplary, both in costs and benefits, by USOE.

22. Classroom management problems are sometimes reported in individualized programs. Some teachers report being too rushed in monitoring and recording of pupil progress. This appears to be reported most often when objectives are very small ones and when they are deemed to be ordered in a rigid teaching sequence. These two factors require more frequent prescriptions and hence more frequent recordings of progress. Schools in which such problems are not reported appear to employ either larger objectives or more flexible sequencing, thus making more feasible greater use of small-group instruction. Also, some schools keep dulpicative records of pupil progress, thus adding to the teachers' task. The solution appears to lie in: (1) size of objectives, (2) sequencing flexibility when appropriate, (3) elimination of duplicative records, and/or (4) computerizing the record keeping function.

23. When pupil progress is plotted for entire groups on wall charts, competition among pupils often increases. Therefor many schools avoid

use of such public progress records. Except for the wall chart practice, there is no reason why individualized methods should increase competition, since both learning and evaluation are more private rather than less private, under individualization.

24. Teachers' experiences with individualized instruction in one subject often result in their making gradual steps toward individualizing other subjects. Such experience also seems to sensitize teachers to a greater concern for the total welfare of the pupils as individual persons.

25. While theorists often contribute to a polarization of "technology" and "humanism", the most successful instructional programs appear to result in outcomes which are valued by both technologists and humanists. If outcomes rather than the the theory base of the products and techniques employed are attended to, this polarization might decrease. Teachers appear to be interested in the tools and their results with children rather than in the theory base on which the tools were developed.

26. The individualized programs seen in the 42 schools visited represent great innovation in methods and materials but little departure from conventional goals of elementary education. This may reflect general public satisfaction with basic skill goals; the demand, perhaps, is primarily for better achievement of those goals.

27. The greatest amount of individualizing was seen in selecting means by which each pupil could attain the same set of objectives. Much less use of pupil-determined objectives was observed, but this was seen more in science and social studies than in reading and mathematics. This may be a desirable state of affairs; the authors offer no judgement concerning this point.

Recommendations

In the opening section of Chapter 4, a list of 22 program components was presented as a recommendation on how programs can be developed, operated, and evaluated. Then those recommendations were illustrated in a more informal way by monologues from hypothetical persons in a hypothetical school. Those monologues represent a recommended mode of operation, derived as a composite mode from all schools visited.

It remains, then only to add a few recommendations not made in Chapters 4 and 5.

Better Use of Teachers' Time

In even the most smoothly operating systems, some unnecesary time seemed to be used because of the assumption that each new task plan must represent a new judgment about the next prescription when a pupil had just mastered an objective. If some objectives in a sequence have only one "lesson plan" or "task plan" (or set of materials) for its accomplishment, an asterik (*) could be placed opposite that objective on the list, so that the pupil would essentially receive an "automatic prescription." All that is necessary, in each such case, is to note the relevant materials and the code as to where they may be found. Then when a pupil passed a test over the preceding objective in the sequence, the teacher would not have to make a new judgment. This would increase the time teachers have when their judgments <u>are</u> needed either because there is a choice in the sequencing of objectives or because there are alternate task plans for a given objective.

Older children who are not new to the system can often make some of these judgments. Decision frequency could thus be reduced for the

teacher; the time saving can be even greater when objectives are larger rather than smaller, as discussed in Chapter 5. Teachers could then make better plans when alternate "strands" are available (as in project PLAN*) or when pupils need help in learning to "branch" (skip objectives they can "test out" on without instruction) and to choose relevant enrichment exercises. (Some pupils seem hesitant to branch, fearing to miss something, just as some teachers, at first, fear they are cheating their pupils if they reduce time spent in large group instruction). In some systems (Esbensen, 1968), contracts are employed for maximum flexibility in sequence, branching, and scheduling study time by each pupil.

Increased use of self-instructional materials would bring further savings in teaching and testing time. Even with a good "task plan," children often need direct individual help from the teacher in using the assigned materials properly. Many schools using programmed instruction or audio tapes to give directions as well as more frequent feedback find less tutoring time to be needed.

Avoiding Unnecessary Duplication of Effort

Much duplication in effort has gone into preparing objectives and keying of materials. One finds very similar objectives, especially in reading and math, in most elementary schools. Thus the same objectives and the same tests and materials are keyed by school after school. While not recommedning restrictions on local determination of objectives or materials, much of the keying done by any school has already been done by many other schools. A school could borrow more, either from other schools, or from resource pools operated by many State Departments of Education and other agencies.

Schedule Improvements

Under most systems, the school are still pretty tied to the bell that rings after each class period. While this is often done because of team teaching schdules, it is also observed in self-contained classrooms, where all children simultaneously put away their prescriptions and turn either to the basal reader or to mathematics. Much better plans can be made to make the individual pupil's schedule more flexible, so he can keep working when fired up on a project, and change when interst lags. The use of contracts, coupled with pupil initiative, can result in more flexible arrangements which would not interefere with the planned program of studies for the pupil nor otherwise create inconvenience.

Real-Life Contacts

No individualized program observed did much to extend learning outside the school. Nothing similar to the work-study programs or other pupil exploration of the community were seen, as in some secondary programs. While there may be less need for this at the elementary level, it would be desirable if planners interested in individualized instruction interacted with planner of those other types of programs.

Methods of Computing Costs

While it is impossible for a school to ignore budget realities, new methods of computing cost effectiveness are needed. The point, simply put, it this: "In counting up costs and effectiveness, the cost of failure should be considered." If individualized programs could be shown, across the board, to cost a little more but result in better achievement and fewer failures or dropouts, any consequent savings in income loss, delinquincy, law enforcement, and imprisonment should be

deducted from the cost increases. Unforturnately, our society separates education budgets from prison budgets, but if there is indeed a direct negative correlation betwen the two costs, better education would thus cost less, all costs totaled together. All data available to the writers suggest that it costs less per year to keep a child in school (in the best public schools in the country) than to keep a person in a penitentiary. Leaving aside human misery, property damage, and personal injury from crime, it would seem well worthwhile to pay for quality education.

It is recognized, of course, that not all factors are included in this discussion of problem behavior. Further, some individualized programs cost no more than conventional ones, and some cost less if dollars are equated to achievement (Morgan, 1974). This report has recommended many ways in which individualized instruction can be made more efficient and less costly. Morgan (1974) has shown that many compensatory education programs have not resulted in achievement gains when the added instruction was "more of the same" (e.g. conventional instruction) rather than individualized instruction.

The Ultimate Benefit: All Children, Lower Costs

It may be noted that many of the schools visited were restricted, by federal law, to spending their supplementary funds for designated groups of children rather than for all. While in the short run this is good because it focuses upon the underpriviledged, in the long run, it would be beneficial (both in humane and financial ways) to extend individualized instruction to all pupils in each school choosing such a program. This would amortize more widely the costs of special materials, one of the added cost where individualizing does cost more.

The benefits of individualized instruction have been fairly well demonstrated especially for the disadvantaged and the underachiever. The system appears to hold as much promise for all children, although some variations from current practices might be needed.

Looking into the future, one can expect continued evolvement in the nature of individualized programs, just as there were evolvements for present programs. The three national programs described in this report have been expanded in scope and otherwise modified continously based on school experience. Locally-developed programs have followed a similar course of continous adjustments, change, and refinement.

The total evidence, based on summative evaluations and school visits appears to justify the conclusion that, while still in an evolutionary state, individualized instruction is now beneficial and feasible, and will become less costly, and it can be considered as providing a set of new tools of genuine benefit in achieving quality education for all.

Selected Bibliography

Bechtol, William M. Individualizing Instruction and Keeping Your Sanity. Chicago: Follett Publishing Company, 1973.

Emphasizes the IGE model for individualizing instruction. Includes details of how an IGE school is organized and means for developing and using suitable instructional materials incorporating what is known about different learning styles and modes. Separate chapters deal with communicating with parents, implementing individualized instruction, and cooperating with other schools involved in IGE.

Dell, Helen D. Individualizing Instruction: Materials and Classroom Procedures. Chicago: Science Research Associates, Inc., 1972.

A "how-to-do-it" book for those who are organizing programs of individualized instruction. Topics include how to : write instructional objectives; evaluate student progress; set up a record-keeping system; organize the classroom; and assess the extent of individualization. Each chapter has self-checking exercises to help the reader master the material presented.

Duane, James E., (Editor). Individualized Instruction-Programs and Materials: Selected Readings and Bibliography. Englewood Cliffs, New Jersey: Educational Technology Publications, 1973.

Presents material organized into four parts: the transition from group to individualized instruction; established formats for individualizing; media; and evaluation. Each part contains articles, most of which are reprints from various journals. The 30 articles include descriptions of IPI and PLAN* as well as approaches for developing and using materials locally available. Appendices contain sample materials, and an annotated bibliography of books on individualized instruction.

Edling, Jack V. Individualized Instruction: A Manual for Administrators. Corvallis, Ore.: State University, 1970.

Describes programs of 46 schools visited, highlighting special features in the individualized instruction programs. Recommendations for implementing programs are offered, along with discussion of major components of a system.

EPIE, Educational Product Report: An In Depth Report, (No. 58, Evaluating Instructional Systems), January 1974

A description of PLAN*, IPI, and IGE with typical classroom applications and evaluative comments organized under the design constructs of objectives, organization, modes of transaction, and evaluation.

Esbensen, Thorwald. Working with Individualized Instruction: The Duluth Experience. Palo Alto, Cal.: Fearon Publishers, 1968.

Describes the experiences of a school district which developed its own modes of individualized instruction, including the use of contracts as an incentive and management technique.

Fox, C. Thomas Jr., and De Vault, M. Vere. Technology and humanism in the classroom: Frontiers of educational practice. Educational Technology, October, 1974.

Describes the valued features of school programs as seen by technologists and humanists. Cites programs that contain features in both orientations and argues that the best (most practical) programs employ both technology and humanism. Improvements made under one viewpoint result in improvements in the other; therefore these viewpoints need not be antagonistic in practice.

Gagne, Robert M. and Briggs, Leslie J. Principles of Instructional Design. New York: Holt, Rinehart and Winston, 1974.

Proposes that instructional objectives be classified in accordance with five domains of learning and learning outcomes: intellectual skills, motor skills, cognitive strategies, attitudes, and information learning. The conditions of learning appropriate for designing instructional events for each domain of learning are specified, along with means for assessing learners' performances. Suggestions are given for designing instructional systems based on these domains, and methods of system evaluation are discussed.

Harnack, Robert S., Toepfer, Jr., Conrad F., and Sullivan, John, K. Computer-Based Curriculum Planning (Third Revision), Buffalo, N.Y.:

Center for Curriculum Planning, January, 1974.

Describes a system in which the computer, given a topic for instruction, suggests objectives, activities, materials, and evaluation for an individual project, or small or large group modes of study. The teacher uses knowledge about each pupil to select the preferred mode. Inputs were prepared by cooperating teachers over a period of several years since 1965. The system saves teachers planning time, so precious and short in supply.

This system is, in a way, the converse of how project PLAN* intended to use the computer -- to record the past history of pupil learning style in relation to success in learning, so that the teacher can match available material to the pupil.

One system thus enumerates options from which the teacher chooses based on knowledge about the pupil. The other system accumulates information about the pupil and presents it for consideration when a learning mode is to be chosen.

Hull, Ronald E. Selecting an approach to individualized instruction. Phi Delta Kappon, November 1973, 169-173.

Presents a brief overview of PLAN*, IPI, and IGE, and illustrates how Edling's classification system might be applied to these programs.

Lewis, James, Jr. Administering the Individualized Instruction Program. West Nyack, N.Y.: Parker Publishing Co., Inc., 1971.

A guide to assist school district in developing and operating individualized instruction programs.

Morgan, Virginia Richardson. A Cost Study Analysis of Measured Gains in a Reading Program Utilizing Individualization of Instruction. Doctoral Dissertation, Florida State University, December, 1974.

Reviews the failure of "more of the same" supplementary teaching programs in enhancing pupil achievement, and in contrast, presents evidence that an individualized reading program can produce superior results at less cost per unit of achievement gain.

Talmage, Harriet (Editor) Systems of Individualized Education. Berkley, Cal.: John McCutchon Publishing Co., 1975.

Reviews the theoretical bases upon which curricula may be based, and presents descriptions of PLAN*, IPI, and IGE. Includes reflections upon these three individualized systems by a design theorist, a curriculum theorist, and others. Contains a final chapter by a philosopher-evaluator.

Weisgerber, Robert A. Developmental Efforts in Individualizing Learning. Itasca, Ill.: F.E. Peacock Publishers, Inc., 1971.

Contains descriptive chapters about PLAN*, IPI, IGE and other systems and materials, and descriptions of selected locally-developed individualized programs. Some of the materials, components, or systems described are now obsolete, or have been succeeded by other products or systems.

Appendix A

List of Schools Visited

Of the 42 schools visited during this study, the breakdown as to type of individualized program was as follows:

PLAN* ---------- 5 schools

IPI ---------- 8 schools

IGE ---------- 4 schools

Locally-developed ------ 25 schools

These four types of programs are identified and described in the body of the report.

Among these schools, 19 programs involved several teachers in a single school; the remainder of the programs were district-coordinated efforts of several schools. Fourteen school districts, in 8 states were visited.

The following chart includes information about the visitations. Because of the variety of ways schools individualize instruction, in some cases it was not possible or relevant to differentiate between individual classes. This was especially true in schools where much instruction occurred in a learning center or other centralized areas. The amount of time spent observing any single group of pupils varied from 5 to 50 minutes. In open-space buildings, the observers usually found it convenient to move from one area to another and observe more than one group of children at the same time.

Just as the amount of time spent observing pupils varied, so did the discussions with teachers. The chart shows only those interviews which provided substantial information. In most schools the observers briefly talked to many other people, such as principals and master teachers.

In most districts, interviews were first conducted with superintendents,

directors of special projects and curriculum supervisors. Then the visits to individual schools followed.

Schools	Primarily self contained- some modified facilities.	Primarily open space or pods.	No. of classes observed longer than 10 minutes.	Approx. amount of time spent observing pupils (Hours).	No. of teachers and aides interviewed (excluding district & school administrators	Type of program.
Cupertino, California						
Blue Hills Elementary		X	**	4	5	Locally dev. program
de Vargas Elementary		X	**	1	3	Locally dev. program
Montclaire Elementary	X		4	1	2	Locally dev. program
Fountain Valley, California						
Fulton School		X	**	3	5	Locally dev. program
Talbert School		X	**	4	4	Locally dev. program
Hawaiian Gardens, California						
Furgeson Elementary		X	**	3	3	Locally dev. program
Wittman School		X			***	Locally dev. program
Long Beach, California						
Burnett Elementary	X		3	2 1/2	3	IPi
Los Angeles, California						
111th Street School		X	**	1	2	IGE
San Carlos, California						
Brittan Acres Elementary	X		5	2	5	Locally dev. program

** These classes were in open space and/or learning centers making precise class differentiation not possible.
*** Only the principal and/or assistant principal were interviewed.

Schools	Primarily self contained- some modified facilities.	Primarily open space or pods.	No. of classes observed longer than 10 minutes.	Approx. amount of time spent observing pupils (Hours).	No. of teachers and aides interviewed (excluding district & school administrators	Type of program.
Central School		X	**	3	6	Locally dev. program
Tierra Linda School	X		2	1 1/2	2	Locally dev. program
Wilmington, Delaware						
Harlan Elementary	X		2	1	***	IPI
Jacksonville, Florida						
Ft. Caroline Elementary	X		7	5	11	Locally dev. program
Northshore Elementary	X		2	1 1/2	1	Locally dev. program
Norwood Elementary	X		4	2 1/2	5	Locally dev. program
San Jose Elementary School	X				3	Locally dev. program
Panama City, Florida						
Oakland Terrace Elementary	X		3	2	8	IPI
Tallahassee, Florida						
Moore Elementary		X	4	4	4	Locally dev. program
Alvany, Georgia						
Carver Junior High	X		1	1	1	One special classroom
Highland Elementary	X		1	1	1	in each elementary

** These classes were in open space and/or learning centers making precise class differentiation not possible.
*** Only the principal and/or assistant principal were interviewed.

Schools	Primarily self contained- some modified facilities.	Primarily open space or pods.	No. of classes observed longer than 10 minutes.	Approx. amount of time spent observing pupils (Hours).	No. of teachers and aides interviewed (excluding district & school administrators	Type of program.
River Road Junior High	X		1	1	1	school in the district.
St. Teresa Elementary	X		1	1	1	Each special teacher
Southside Junior High	X		1	1	1	has several groups of
Sylvandale Primary	X		1	1	1	17 pupils for 50 minutes
						per day for compensatory
						instruction in language
						arts. Locally-dev.
						program.
Alma, Georgia						
Bacon County Elementary	X		4	2	5	PLAN* (not using
Bacon County Middle School	X		2	1	3	presently)
Valdosta, Georgia						
Parker-Mathis Elementary	X		8	4	7	IPI
Aurora, Illinois						
Oak Park Elementary	X		9	4	6	PLAN*
O'Donnell Elementary		X	5	2	3	PLAN*

** These classes were in open space and/or learning centers making precise class differentiation not possible.
*** Only the principal and/or assistant principal were interviewed.

Schools	Primarily self contained- some modified facilities.	Primarily open space or pods.	No. of classes observed longer than 10 minutes.	Approx. amount of time spent observing pupils (Hours).	No. of teachers and aides interviewed (excluding district & school administrators)	Type of program.
Waldo Junior High	X				***	PLAN*
Chalmette, Louisiana						
Millaudon Middle School	X		4	2	12	Locally dev. program
Rowley Elementary	X		3	2	4	Locally dev. program
Berwyn, Pennsylvania						
Hillside Elementary	X		2	2	3	IPI
Philadelphia, Pennsylvania						
Conwell Middle Magnet School	X		3	3	3	Locally dev. program
Mc Call Elementary	X		1	1	1	IPI
Powell School	X		3	3	3	Locally dev. program
St. Gregory School	X		4	2	***	IPI
Smith Elementary	X		2	1		IPI
La Crosse, Wisconsin						
Jefferson Elementary	X		**	3	6	IGE
Summit Elementary		X	**	4	7	IGE

** These classes were in open space and/or learning centers making precise class differentiation not possible.
*** Only the principal and/or assistant principal were interviewed.

Schools	Primarily self contained- some modified facilities.	Primarily open space or pods.	No. of classes observed longer than 10 minutes.	Approx. amount of time spent observing pupils (Hours).	No. of teachers and aides interviewed (excluding district & school administrators)	Type of program.
Onalaska, Wisconsin						
Northern Hills Elementary		X	**	4 1/2	8	IGE

** These classes were in open space and/or learning centers making precise class differentiation not possible.
*** Only the principal and/or assistant principal were interviewed.

Appendix B

Project Procedures

Since this report is for school practitioners rather than for researchers, and since one of the two major data sources was observed current school practice, two kinds of field review were sought. First, for as many schools visited as possible, a draft summary of observations made during the visit to the school was prepared, and school personnel were invited to comment on the accuracy of the summary. Second, the total draft report was sent to some of the persons visited in order to obtain their criticisms and suggestions as to how to improve the usefulness of the report.

All school visits were made from September through early December, 1974. The first visits were made by both authors of this report. During those early visits, interview and observation procedures were tried out and modified, and studies were made as to the degree of agreement between the two observers in recording what was observed and what conclusions or inferences were drawn as a consequence of the observations and interviews. Having established the procedures which seemed to yield the needed types of information, and having found an acceptable degree of agreement between observers, the remaining visits were made by one or the other of the two observers.

At the outset the observers planned to develop a standard from for recording classroom observations and interviews with teachers. However so many differences among teachers and programs were encountered that this plan was abandoned. Instead, the observers made such notes as were relevant to each observation or interview.

A progress report was prepared based on the first joint visit by

the two observers. That report described the degree of agreement between two reports, written independently by the two observers, based on that first visit to four schools in one district.

Apart from the above check on agreement between the two observers, there are no specific methodologies to report. No novel methodology is claimed. This was a field study in which observers recorded and interpreted what they observed, supplemented by the literature review.